

NO-A164 818

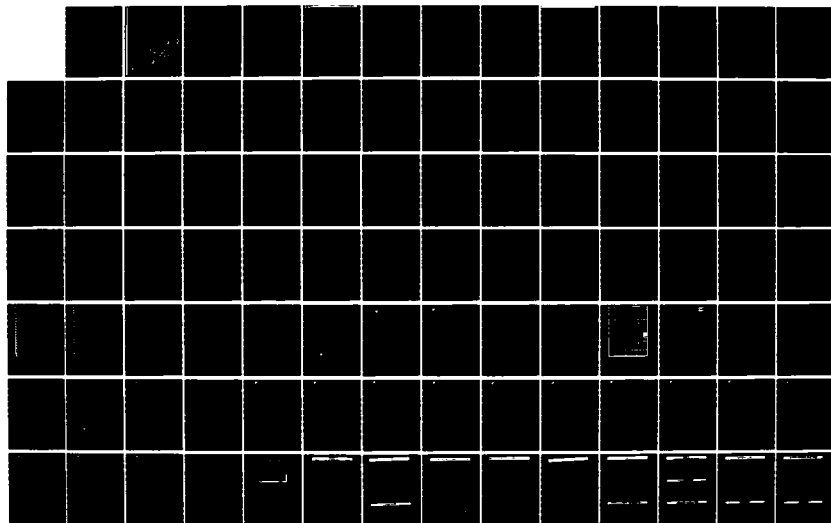
THE BANK OF WESTMINSTER AND HYLAND PARK CONSTRUCTION  
CONTRACTS AS ENGINEER. (U) COLORADO UNIV AT BOULDER DEPT  
OF CIVIL ENVIRONMENTAL AND ARCH. R J BOSSA 13 DEC 84  
N66314-70-A-0062

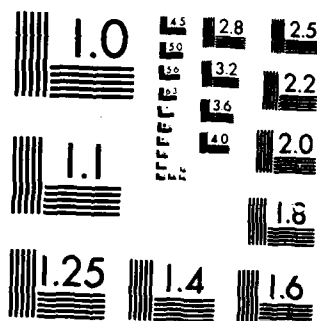
1/2

UNCLASSIFIED

F/G 5/1

NL





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A164 818

## Construction Research Series

THE BANK OF WESTMINSTER AND  
HYLAND PARK CONSTRUCTION CONTRACTS  
AS ENGINEERING STUDENT CLASSROOM PROJECTS;  
CONSTRUCTION PHASE

By  
Robert J. Bossa

SELECTED  
FEB 27 1988

# Construction Engineering and Management Program



This document has been approved  
for public release and sale; its  
distribution is unlimited.

University of Colorado  
Department of Civil, Environmental,  
and Architectural Engineering  
Boulder, Colorado 80309

FILE COPY

86 2 27 090

## **DISCLAIMER NOTICE**

**THIS DOCUMENT IS BEST QUALITY  
PRACTICABLE. THE COPY FURNISHED  
TO DTIC CONTAINED A SIGNIFICANT  
NUMBER OF PAGES WHICH DO NOT  
REPRODUCE LEGIBLY.**

1

THE BANK OF WESTMINSTER AND  
HYLAND PARK CONSTRUCTION CONTRACTS  
AS ENGINEERING STUDENT CLASSROOM PROJECTS;  
CONSTRUCTION PHASE

By  
Robert J. Bossa

Presented to:

The Department of Civil, Environmental,  
and Architectural Engineering

The University of Colorado at Boulder

In Partial Fulfillment of the Requirements

for a Masters of Science Degree

The University of Colorado at Boulder

Boulder, Colorado

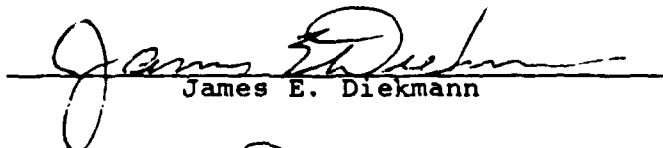
December 13, 1984

SELECTED  
FEB 27 1986  
S D A

N66314-70-A-0062

This document has been approved  
for public release and sale; its  
distribution is unlimited.

This Report for the Master of Science Degree by  
Robert J. Bossa  
has been approved for the  
Department of  
Civil, Environmental, and Architectural Engineering  
by

  
James E. Diekmann

  
Roland C. Rautenstrauss

  
Edward Morrison

Date 12/12/94

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A1 23	

## CONTENTS

### List of Figures

Acknowledgements .....	iii
Introduction .....	1
PART I - PROJECT REPORT .....	I-1
The Organization Structure and the Creation of Walters Construction Management .....	I-1
Objectives of Walters Construction Management as Compared to Theoretical Organizations .....	I-8
Differences Between Walters Construction Management and Other Construction Managers .	I-11
Advantages and Disadvantages of Walters Construction Management .....	I-16
PART II - LEGAL AND CONTRACTURAL REQUIREMENTS .....	II-1
Theoretical Application .....	II-2
Practical Application .....	II-9
PART III - CONCLUSIONS .....	III-1
PART IV - PHOTOGRAPHS .....	IV-1
APPENDICES	
A. Bid Documents and Contract .....	A-1
B. Daily Logs .....	B-1
C. Project Management Software Utilized ...	C-1
D. Subcontract Backcharge .....	D-1
E. Problems and Solutions .....	E-1
F. Bibliography .....	F-1

## LIST OF FIGURES

Figure		Page
1	Organizational Structure .....	I-2
2	Construction Phase Photograph Location .....	IV-3



Bossa, Robert J. (M.S., Civil Engineering)

The Bank of Westminster and Hyland Office Park Construction Contracts as Engineering Student Classroom Projects: Construction Phase.

Employers often find that the recently hired engineering school graduate has difficulty in correlating the methodology and the technology learned in the classroom to actual construction projects. The following report attempts to help in tying together classroom work and an actual construction project.

Information for the report was provided by Walters Construction Management, Inc. The report describes an actual office building presently under construction. Portions of the report are intended to be used as narrative type lessons, other parts are to be used as laboratory problems.

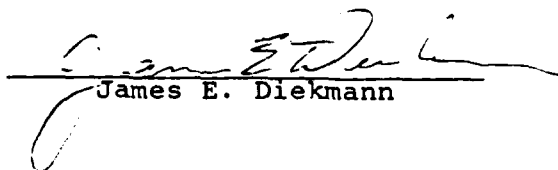
The report focuses on the organizational structure of the construction firm and the contractual requirements of the construction firm. The text then analyzes selected portions of the project in order to explain why certain construction related procedures have been made.

Photographs of the construction phase of the project are presented. The photographs are intended to provide a pictorial history of the construction project.

Past reports on this project will be used along with this report to develop a complete, total construction project for classroom application.

This abstract is approved as to form and content.

Signed

  
James E. Diekmann

#### ACKNOWLEDGEMENTS

I would first like to thank the Bill Walters Company, specifically Mr. John Fox and Mr. David Metcalf of Walters Construction Management, Inc., who provided this construction contract to be used as a classroom project. The amount of time and costs expended by them and the firm is truly appreciated.


I would also like to thank Professor James Diekmann for his help and advice throughout this project.

## INTRODUCTION

Within the scope of the undergraduate and graduate Civil and Architectural engineering programs is the need to relate information from textbooks and classrooms to the actual construction industry. This report will attempt to bridge the gap between real world situations and the world of academics.

Walters Construction Management has agreed to let their organization and one of their current projects serve as a model for this report. The Bank of Westminster is under construction at the corner of 92nd Avenue and Sheridan Blvd. The bank project along with the organizational structure of Walters Construction Management will be studied and analyzed and results will give a realistic approach to future student assignments.

The objectives of this report are to study the construction phase of the Bank of Westminster and to tie it to specific graduate and undergraduate courses offered in the Construction Management field in the Department of Civil and Architectural Engineering. This report will study the development of the B.L. Walters company from the original corporate entity of Walters Construction Management and why this cooperation came into existence.



The actual organization of Walters Construction Management will be used as a reference for study in the Construction Management (CE 525) class. This will give the class a successful and working organization to compare with the different organizational structures referred to in the classroom. Students will be able to discuss the advantages and disadvantages of this particular organization and compare their thoughts with the thoughts of members in the organization of Walters Construction Management. The class will be given the organizational structure and then discuss the formal and informal links of each department. Afterwards they can again compare their assumptions or results with those of the actual formal and informal links within Walters Construction Management.

By following one of the numerous subcontractors on this job students will experience the actual paper flow and contract related problems encountered during this project. This will be very effective in the Construction Contracts (CE 524) class when discussing effects of backcharging or how backcharging or changes in the plans will affect the subcontractor and his contract.

The use of time lapse photography will be used in the Construction Engineering I & II (CE 528 & CE 529) classes. Time lapse photography will show actual repetitive construction methods used on this project. The class will be able to analyze these methods and decide on

possible alternative solutions to these specific construction practices.

Each classroom application will have packaged slides specifically for that module which will give a visual recording of the project at specific construction phases and will assist students in visualizing the project phase being discussed. The slides will encompass the project from the clearing of the site through the complete building.

## **PART I - PROJECT REPORT**

### **THE ORGANIZATION STRUCTURE AND THE CREATION OF WALTERS CONSTRUCTION MANAGEMENT**

The B.L. Walters Corporation was formed approximately three years ago, in 1981, to the corporate level from the Walters Construction Management organization which was formed in 1974. The primary motivation for forming a full service development company from the traditional construction management firm was the desire of the Chief Executive Officer to have control over what was being developed and how that development was to be accomplished. Because of the objective to have complete control, Walters Construction Management expanded and became the Bill L. Walters Company.

This Corporation is comprised of numerous companies that handle the acquisition of the land, the development of the raw land, the management of the construction, the maintenance and management of the constructed building, the leasing of completed buildings, and a Chief Financial Officer to maintain all the accounting records of the B.L. Walters Company. The overall corporate structure is shown in Figure 1.

ORGANIZATIONAL STRUCTURE

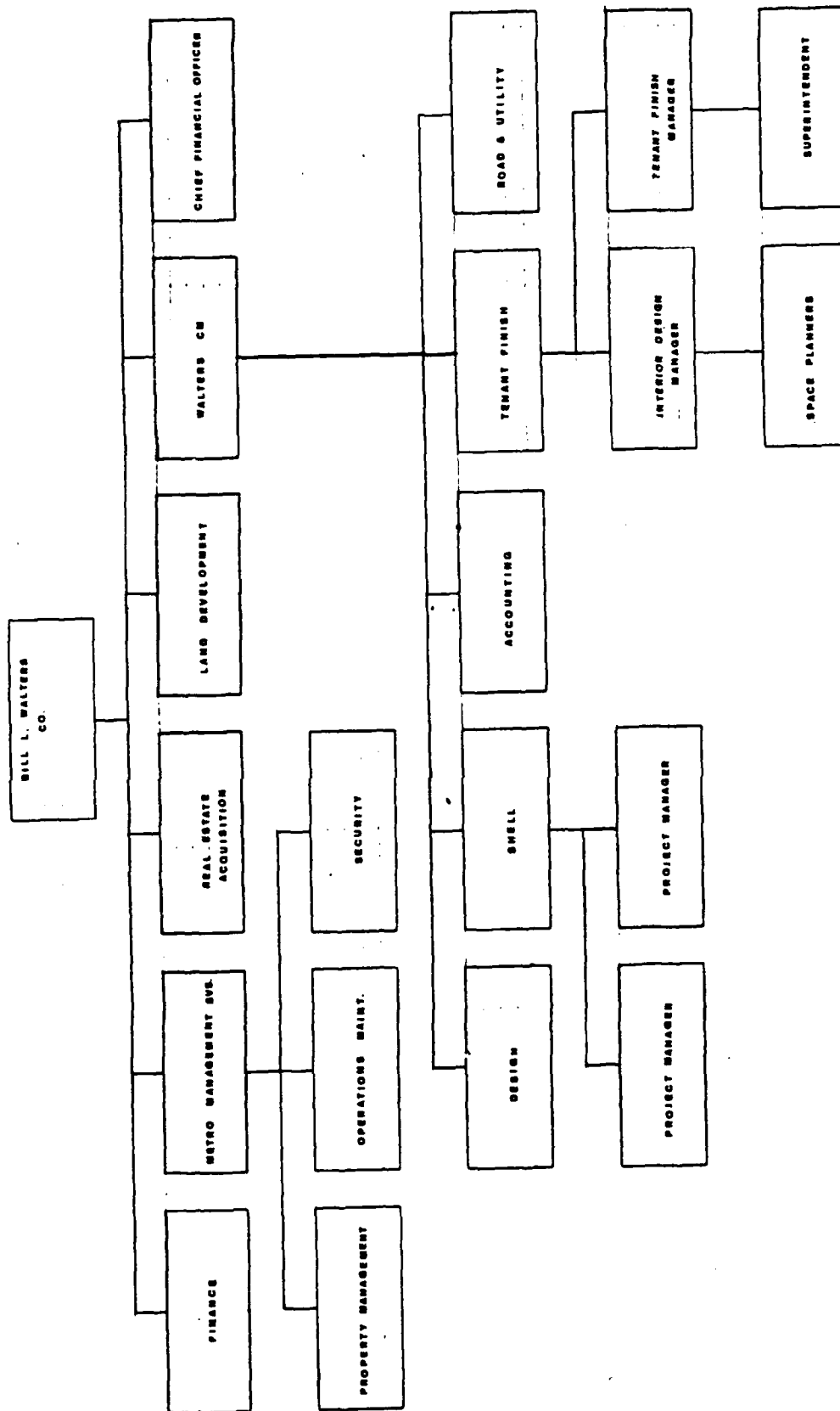


FIG. 1



This report will deal strictly with the construction management portion of the entire organization and will also touch upon the management/maintenance of a project once a project has been completed. The construction management part of B.L. Walters Company, hereafter referred to as Walters Construction Management, is a wholly owned subsidiary, and is divided into five areas. These areas are Architectural and Design, Shell Construction, Tenant Finish, Roads and Utilities, and Accounting.

Each of these separate areas operate on an arm's-length, semi-formal basis with the B.L. Walters Company. At the head of Walters Construction Management is the Vice President and General Manager who reports directly to the President of B.L. Walters Company. The manager of Shell Projects and the Manager of Tenant Finish, along with the Manager of Road and Utilities, the Senior Architect and the Senior Accountant report directly to the Vice President.

The structure of Walters Construction management makes it very clear that as the general contractor, Walters Construction Management will subcontract a great deal of the work. As an organization they do not maintain the personnel to do the majority of work that a General Contractor can. By maintaining their own Project Managers and Field Supervisors, Walters Construction Management maintains control of these projects. In the architectural area the design drawings may be produced

either by Walters or by outside designers. In the event that an outside designer is used, Walters Construction Management maintains control over the actual design, the design costs, and the design period.

During the design phase both the Shell Construction Department and the Tenant Finish Department are deeply involved in the design phase. All agreements between the various departments are at arms-length and there are written contracts between the various departments.

Tenant finish is one of the new areas created at Walters Construction Management because of the increased need for specialists to deal with tenants and getting them moved into their building. It is seen as one of the most important areas within the Walters Construction Management organization. At Walters Construction Management they recognized the need for this specialty and reorganized, creating Tenant Finish. The improvement of and a more receptive attitude toward tenant finish was seen as a bona fide plus in the renting of completed buildings and development of good customer relations. The Tenant Finish Department has become one of the biggest departments of Walters Construction Management. The Tenant Finish department is considered the income stream for Walters Construction Management. Working with the tenants and insuring their satisfaction is one of the biggest reasons for the success of Walters Construction

Management. To enhance the organization's credibility and to utilize the "one stop shopping" principal, a good Tenant Finish Department is essential to a successful company.

The goals of Tenant Finish are to give the customer complete satisfaction in their final spaces. Tenant Finish works very closely with the Design area and the Shell Construction area in the very beginning to alleviate problems with the customer's requests. The Tenant Finish Department is structured so that under the Manager of Tenant Finish there is an Interior Design Manager who, with the space planners assigned to him, will do the interior design for the tenant based on proven interior designs. The Interior Design Manager will incorporate into his designed spaces other options or additions that the customer may desire. Walters Construction Management builds typical office buildings thereby creating a quick, concise decisionmaking process of what will work in a specific building and what will not.

When the building is erected and weatherproof, the Project Managers for Tenant Finish, who with their own Field Supervisors, complete the interior portion of the building. The Project Manager for the Tenant Finish will maintain clear, concise records of what is being done to the interior of the building. With the typical building having more than one tenant, he will keep

records of what spaces are for what tenants and keep his field supervisors appraised of any changes in design or schedule. The Tenant Finish Department will also do some work for organizations other than Walters Construction Management. The amount of this work is minimal and only comes to approximately ten percent of the actual tenant finish work accomplished.

The Shell Construction part of the Walters Construction Management organization is very similar to the Tenant Finish Department. Under the Manager of Shell Projects there are various Project Managers and in turn, under the Project Managers are various Field Supervisors.

The Project Manager would be involved with the project from the very first design meeting through the tenant occupation of the building. During the initial design meeting the Project Manager will be there with the Architects and Designers so that when any questions arise about the design in conjunction with the actual construction, it can be answered quickly. The Project Manager also communicates with the various Consulting Engineers hired by the Design Department to help answer any questions that may come up about the Mechanical, Electrical, or Structural systems. The Project Manager would report directly to the Manager of Shell Projects with any problems that he could not solve informally with his counterpart in the Design area, Tenant Finish area, Accounting area, or Road and Utility area. The basic

philosophy of the entire organization is to solve any problem that may arise at the lowest possible level.

If the Project Manager can't solve a problem informally, he would move up his chain of command to the Manager of Shell Projects who will try to solve the problem at his level. If this is not possible then the Vice President and General Manager of Walters Construction Management will make the decision. Because of the informality and the close proximity of these various Managers and Project Managers it is infrequent that a problem can not be solved among the people involved.

In conclusion, the Walters Construction Management organization is a main part of a Design-Build organization that also incorporates the management/maintenance of the structure. The Walters Construction Management organization goes one step further than the Professional Construction Manager organization and not only designs and builds, but also leases, manages, and maintains the structures they erect. This keeps Walters a step ahead of their competition. Walters Construction Management controls the design, the design cost, and the design period but also maintains their credibility and their positive public image by catering to their customers not only in the construction phase, but afterwards in the moving in and leasing phase.

**OBJECTIVES OF WALTERS CONSTRUCTION MANAGEMENT  
AS COMPARED TO THEORETICAL ORGANIZATIONS**

In comparison with normal project delivery systems, Walters Construction Management is a combination of the Owner-Builder organization and the Professional Construction Management organization.

Theoretically, a Professional Construction Management organization combines three parties into a team consisting of the owner, designer, and construction manager in a non-adversary relationship. The construction manager works closely with the owner and the designer from the beginning to the completion of the project. The construction manager does not normally perform construction work with his own forces or guarantee the overall cost of the work. Once the budget is approved the construction manager monitors developments in schedules, quality requirements, and spending in order to maintain the objectives established in the beginning of the project. The construction manager advises and coordinates the procurement of any long lead materials or equipment. He will monitor the payments to subcontractors, the changes in contracts or any claims. In general, the construction manager monitors actual cost, schedules, and quality control.

Walters Construction Management does all of this, but is different in one very important aspect of the typical model. Walters Construction Management does not go out and bid on projects to manage; their projects are established down through the hierarchy of their chain of command. The Chief Executive Officer who is an architect by training, may want to develop land in accordance with members of an organization that he has an interest in, thereby creating the projects.

Walters' desire to maintain absolute control over their project is in line with the aims of the Owner-Builder organization. In theory, the owner is responsible for the design and construction of the project. The owner has the option of using his own work forces or to subcontract part or all of the work.

The Walters Construction Management organization is a Line and Staff Task Force. As shown in Figure 1 there is a distinct hierarchy and a designated chain of command. The hierarchy is designated only for those decisions that can't be resolved at lower levels in the organization. A strength of Walters Construction Management is the project orientation of the entire project team. One of the weaknesses, in theory, in a line and staff organization is that individuals may be troubled by the dual accountability to both a project and a functional boss.

Walters Construction Management is also structured somewhat as a Matrix Organization. The informal lines of the structure opens lines of communication at all levels and gives people the ability to talk with counterparts and maintain a knowledgeable and productive environment. Therefore, Walters construction Management is most definitely a Line and Staff Task Force, but with a little of the Matrix Organization added to help alleviate any communication problems.

In conclusion, the main objective of Walters Construction Management is to maintain absolute control over the project and to produce a product that is a marketable commodity.



## **DIFFERENCES BETWEEN WALTERS CONSTRUCTION MANAGEMENT AND OTHER CONSTRUCTION MANAGERS**

A major difference between Walters Construction Management and other developers is the "one stop shopping" approach. Not only will Walters Construction Management design the building, they will manage the interior finish, and will maintain the upkeep of the building and surrounding grounds. This is a major difference since most developers utilize a fragmented approach to the development of buildings.

A construction Manager who utilizes the fragmented approach will have someone come in who owns the land and wants it developed. This manager may or may not help find a designer that can design what the owner wants on the land. Once the design is approved by all interested parties, it is then turned over to the construction manager. The construction manager in turn requests bids based on these designs from various general contractors who in turn receive bids from various subcontractors.

Once the construction manager picks his general contractor he will manage the job as per plans and specifications and keep track of any changes in the project. He will be the owner's representative on the job. The construction manager, in most instances, will carry

professional liability insurance for this specific project and also on any other project he may be managing at the time.

Under Walters Construction management, a major difference is that Walters Construction Management is covered under an umbrella policy from the B.L. Walters Company for professional liability. When Walters Construction Management gets a project to be managed, it usually has been first brainstormed at the Chief Executive Officer's level of the B.L. Walters Company. The land has been acquired under the Land Acquisition Department of B.L. Walters Company, and the developers in Land Development may have specific plans for this tract of land.

Walters Construction Management, like other construction managers, would go out looking for bids for the various parts of construction, but would act as their own general contractor. The differences are quite unique in that Walters Construction Management has control over the design of the project, control of the construction management of the project, control over changes in the design of the project, and once the project is complete, control over the management of the building.

A developer or construction manager who utilizes the fragmented approach can run into many difficulties during the project's construction. There could be quite a bit of money spent in litigation determining who is

responsible and who will pay for corrections to any faulty design or construction applications. If once a tenant has occupied the building and there are maintenance problems, the developer must get in touch with the people who do their maintenance to correct it. In the B.L. Walters company, they would handle their own maintenance problems and there would be no doubt as to what the priority is.

In the fragmented approach, the "finger pointing" and litigation could go on for quite awhile. Finding out who is responsible and then making sure the responsible party adheres to their end of the agreement could be costly not only in dollars, but also in time. While in the full service development company such as Walters Construction Management, a decision could be made and action to fix the problem could be imposed.

The Walters Construction Management organization allows decisions to be made faster in the pre-construction phase and the construction phase than in the fragmented approach. This is because in the fragmented approach, the construction manager or developer is trying to touch base with numerous people involved in the project at various locations. The start up cycle in decisionmaking at Walters Construction Management is quite short compared to a fragmented approach of construction management. At Walters Construction Management the process of decisionmaking is known and has been

utilized over and over again. The members of the organization know who is in charge and where to go for certain decisions. In a fragmented approach, the construction manager must first establish the lines of communication and the chain of command. This alone is very time consuming.

A significant difference is that the Chief Executive Officer of B.L. Walters Company has absolute control over the Walters Construction Management organization as well as Land Acquisition, Land Development, Maintenance/Management, etc. which ensures a quick decisionmaking process. Because of this control, the Walters Construction Management organization can be more positive and make absolute commitments to cities, municipalities, and/or other public service areas for not only the construction of a project but its overall development. This greatly enhances the credibility of the organization as well as maintaining the flexibility to propose or accept alternatives to the design quickly and effectively.

In conclusion, the significant difference between Walters Construction Management and the fragmented approach is that the decisionmaking process in both the pre-construction and construction phase is quicker and much more efficient in an organization such as Walters Construction Management. Having all the participants for a certain project under one roof makes the life of the

project from conception to completion significantly shorter and improves the quality of the finished project to the tenant or owner.

## **ADVANTAGES AND DISADVANTAGES OF WALTERS CONSTRUCTION MANAGEMENT**

In interviews and conversations with several members of the organizational structure of Walters Construction Management, some distinct advantages and disadvantages of the organization appeared.

A distinct advantage that appeared frequently was that there was a more positive attitude towards the customer and that commitments would be made and adhered to. The majority of people felt that this was a great advantage in enhancing Walters Construction Management's credibility and was in conjunction with the B.L. Walters Company policy of insuring the customer's satisfaction. At times this could be a disadvantage. Because of the organization's feeling of responsibility, they could be abused by trying to make the customer happy at all costs. Having to maintain the warranty can sometimes create the feeling of jumping through hoops.

During good construction periods, the desire to control the project in its entirety could be an advantage because you have a varied selection of customers to choose from. A disadvantage to maintaining complete control is that a number of contractors don't want to give up control to Walters Construction Management, so they don't work for them. This is found more often

during good construction periods. This could put a damper on the marketplace for Walters Construction Management, creating a loss of consultants and a loss of a certain part of the market. During slow times in the construction field, this desire for control is not an advantage, but it is not a big disadvantage.

One disadvantage is that it costs more to do business. The continuity of the organization creates a need for more supervisors to be kept on the payroll when times are slow. In other organizations they would release some supervisors, but at Walters Construction Management they are retained.

Having changes dealt with at a lower level in the organization is a valuable advantage. If there is a policy change affecting a project, because of the informal chain of command within Walters Construction Management, it can be dealt with quickly and at the level the change is having the most effect. The most distinctive advantage observed was that there was more teamwork in the organization at Walters Construction Management. The adversary relationship was minimal and it was observed that any adversities between certain departments could be resolved. The goal of Walters Construction Management is known by everybody and the teamwork needed to achieve that goal is there. It is respected that when it comes down to "passing the buck" or if adverse designs or adverse construction occur, it is all kept within the

B.L. Walters Company organization. This enhances the ability for problems to be solved expeditiously and favorably to all parties involved.

In conclusion, based on my interviews and personal observations, it was found that the advantages of the Walters Construction Management organization outweighed the disadvantages. Various members of the organization felt that the teamwork was favorable for a successful project and that having a self-contained organization where any number of problems from accounting to design could be solved quickly and effectively, was mandatory for a successful project.



## **PART II - LEGAL AND CONTRACTUAL REQUIREMENTS**

Walters Construction Management subcontracts a major portion of their work and with this comes the responsibility to insure that they receive their specified requirements.

This section will address the requirements of a Construction Management firm as regards the bidding process, contracts, job progress management, job cost management, planning and scheduling, modifications, and commercial issues. It will then address the practical application of the aforementioned procedures. These procedures will be documented with actual paperwork used on the Bank of Westminster project.

## THEORETICAL APPLICATION

At the beginning of a project plans and specifications must be developed and approved for construction. This requires that the engineering departments and the designer be able to formally agree on a specific set of plans that will fulfill the requirements of the owner. In conjunction with the plans, the various departments will specify any restrictions or constraints that must be included in the specifications.

Once the plans and specifications are approved the Construction Management firm will enter the bidding process. A letter of inquiry is sent out to various subcontractors to determine what contractors are interested in bidding on the project. It will describe when the bids are to be invited, the general nature of the project, what kind of bid is required, and when bids are due.<sup>1</sup> Before the Construction Management firm or owner solicits bids from any contractor he will perform extensive background research on these contractors checking their previous projects, their financial stability, and other general information. Once the background research is complete, the owner will send out invitations to bid. The package will contain the plans and specifications, the type of contract that will be used, the bid form, and

the general conditions of the bid invitation. The subcontractor is then required to assemble his bid.

Once the subcontractor assembles his bid, the owner and architect have 30 to 60 days to award the job. At this time the owner and architect will discuss modifications or changes with the two lowest bidders. In these discussions a clear understanding of the agreements must be reached. Once an agreement is reached the Notice of Award is sent to the subcontractor. This authorizes the subcontractor to start ordering long lead time items and to start shop drawings. In the Notice of Award it is stated that a formal contract will be forthcoming.

In the construction contract received by the subcontractor the description of work, the description of terms, a completion statement insuring the subcontractor is going to provide the labor, material and equipment, and any other general provisions deemed necessary by the owner or his representative. This contract will also stipulate how the subcontractor will be compensated for the work, and have a project title and project number. This form requires signatures, the subcontractor's license number, his Workmen's Compensation Insurance Company, and his Personal Liability Insurance Company with policy numbers and expiration dates.

Once the project is underway it must be insured that the subcontractor does what was specified. Utilizing job progress management is one of the many factors

the owner's representative on the project site must be aware of.<sup>2</sup> In a job progress report the subcontractor will have his job broken into manageable activities and easily understood schedules. A bar chart is easily understood and has activity start and completion dates. This is a widely used tool in understanding a project's progress. The subcontractor, when placing his bid, can set up his progress report based on the time constraints set by the owner. To make this progress report work, meetings must be established on a routine basis so the owner is informed of the subcontractor's schedule. Daily reports filed by the field supervisor will give an account of what the subcontractor accomplished and if he is on schedule. This owner's daily report can be compared with the subcontractor's daily report for any discrepancies. In the daily reports it will show who did what, with how many crew members, and with what equipment and material.

Along with the progress of the job, the project can be managed with the daily, weekly, or monthly costs of the job. The subcontractor and owner have agreed on the subcontractor's costs and monitoring his costs will help insure the owner and subcontractor know what is being spent and for what. The project job cost sheet should break down costs into material, equipment, labor, and any other category the subcontractor or owner deems necessary. This will simplify the subcontractor's requi-

sition for payment. A change that has increased the scope of the contract or a mistake in labor requirements will eventually show up in the cost management forms.

The subcontractor can be awarded the job under several different kinds of construction contracts. The various contracts can be lump sum, cost-plus-fixed-fee or percentage-fee, and guaranteed-maximum-plus-fixed-fee.<sup>3</sup> Once the job has been awarded the subcontractor must take steps to contact his material suppliers and contract for the purchase of the material needed.<sup>4</sup> A requirement by the owner is a list of the material suppliers utilized by the subcontractor and notification immediately if the list changes.

To keep abreast of the construction costs the owner and the subcontractor maintain a day to day record of material costs and labor. The owner's representative on the job can keep track of labor by daily or weekly time cards submitted for approval. Copies of all material requisitions that have been delivered should also be brought through the owner's field supervisor for submittal to the accounting department. Along with the time cards the field supervisor will fill out daily logs of what occurred on the project, what work was accomplished, crew size, equipment used, and any other valuable information. In the mechanical work it is extremely important for the plumbing subcontractor to keep records of the various pipe sizes that are used, valves and

fittings, and the roughing for fixtures as well as the finished fixtures. This will give the subcontractor an idea of the progress of his job by the amount of material in place and also keep check on any pilfering that can occur.<sup>5</sup>

In the beginning of the project the subcontractor should be advised as to the proper format for requisitioning payment. The owner or architect must clearly state what vouchers, payrolls, bills of lading, or other material he should have; the legal requirements that must be met; when the requisition must be ready; who must approve it; and when to expect his money.<sup>6</sup>

Most contracts will stipulate that monthly requisitions be submitted. This helps the accounting department maintain an active account of the cost for the project. It also gives the owner some leverage if he is not pleased with the progress and insures that inspections will be done at timely intervals, on the project by his field supervisor before payment is authorized. When a requisition is submitted a certain percent is retained as a retainage fee. The sole purpose for this retainage is to make sure the owner does not pay the full value until all work is complete.<sup>7</sup> This will act as an incentive for the subcontractor to complete work that may be in dispute.

During the course of a project change orders occur. There are numerous reasons for change orders and

usually can be no trouble if they are handled expeditiously and properly. Some of the more frequent reasons for change orders are changes due to additional work, changes caused by errors in planning, changes in codes creating extras, and extra compensation because of job conditions.<sup>8</sup>

Changes due to additional work are caused by the owner or architect wanting to change the type of work, upgrade the quality of certain material, or make an addition. Changes due to errors in planning might be errors in dimensions or omitting an essential piece of equipment. The subcontractor is responsible for knowing the codes of his trade and should be aware of any changes in the codes. Change of job conditions can be created by the owner or architect being indecisive, the owner may have financial trouble and slow the job down, or an incompetent subcontractor can not accomplish what he originally agreed on.

Whatever the reason for changes a procedure must be established for processing these changes. Since the changes or modifications will reflect what is happening on the project site, the information must come from the project site itself.<sup>9</sup> A change order can occur at any point of the total construction operation and should include any specific information concerning the exact area where this change originated and who initiated it.<sup>10</sup> Prompt notice should be given to the Contractor, the

Owner, and the Architect of any proposed changes. This will give all the personnel involved the earliest notice of any impending changes.

The authority to authorize changes or modifications will be with the owner or the architect or their designated representatives. Therefore complete and proper procedures for recording proposed changes or modifications by the field supervisor are extremely important. There must be complete information obtained from the field supervisor covering every step from the initial suggestion of the change, to the estimation of material and labor required for the change, the new agreement between the owner and subcontractor, and the cancellation of the change or the incorporation of the change.<sup>11</sup> Because of the various reasons for changes and modifications a high priority should be to have a member of the contracting organization examine the bidding documents from a contractual standpoint and determine where changes may be adviseable.<sup>12</sup>

In conclusion, the object of any contracts administrator is to see that problems are addressed before they reach the construction site. Clear, concise procedures for the contractors to follow when bidding for a project and explicit guidelines on how to address any problems once the project is started should be established. Once the guidelines and rules are established and understood by all parties concerned then a well organized and properly run project can be expected.



## PRACTICAL APPLICATION

The practical application of legal and contractual requirements will be discussed utilizing one of the subcontractors for the Bank of Westminster project.

Walters C.M. started their preliminary meetings with the various engineering departments, architects, and project manager for the Bank of Westminster as early as March 1984. In these meetings preliminary designs were examined and reviewed to alleviate any future construction or management problems. The past experiences of the engineers and the project manager could help identify problems in the design that will effect the construction of the project.

When the plans and specifications were finalized Walters C.M. sent out invitations for bids. Having dealt with contractors or subcontractors in the past Walters C.M. has a list of acceptable contractors and will notify them of possible projects. During the preliminary design meetings Walters C.M. had already been in touch with various contractors and subcontractors explaining the project and getting responses from interested contractors. Walters C.M. is a private organization and therefore does not have to pick the lowest bidder or accept the lowest bid. Having sent out a letter of inquiry

Walters C.M. will receive a Bid Form from the various contractors stating they have reviewed the plans, specifications, and addenda prepared by the design firm hired by Walters C.M.. It will give the name of the project, the bid amount, and what they will accomplish. The bid form will state the contractor will formalize the work with the signing of a written contract within ten days of receiving a written "Notice of Award". See Appendix A, Fig. 1.

Before Walters C.M. sends a "Notice of Award" they will review the contractor's bid form to insure he received all of the addenda and review any exceptions or changes the contractor made to what is specified. The contractor and Walters C.M. will insure there is a clear understanding of the agreements before a "Notice of Award" is sent. These agreements can be made over the phone or in person, but proper documentation must be required. See Appendix A, Figure 2 for copies of phone bids that the plumbing subcontractor made deleting certain items, revised prices and what was not included on the original bid.

The "Notice of Award" is then sent to the contractor, referencing the project by title and location, for him to proceed based upon his proposal of the dated bid form. The "Notice of Award" will give the contractor authorization to start shop drawings and to order long lead time items. Within the "Notice of Award"

is a commitment that a formal contract is forthcoming. See Appendix A, Fig. 3.

Walters C.M. requires that once the contractor receives his "Notice of Award", a list of the material suppliers that the contractor will be utilizing is submitted and if any changes to the list occur they will be notified immediately. See Appendix A, Fig. 4.

Within 30 to 60 days Walters C.M. will send out a standard Subcontract Form for the subcontractor to review. Their form is very similar to the American Institute of Architects Document A101. It will contain the date of agreement, who the agreement is made between, the project name, the architect's name, and the provisions of the contract. This form will stipulate the work to be accomplished and will provide standard provisions on the back. Additional provisions may be added and noted for the subcontractor's verification and approval. As discussed in the Theoretical Application a Workmen's Compensation Insurance Policy and a Personal Liability Insurance Policy with policy numbers and expiration dates appears on the bottom of the Standard Subcontract Form. See Appendix A, Fig. 6 and 7.

One of the additional provisions Walters C.M. added was provision 43 which addresses labor disputes on the project. This provision requires that work be continued on the project without delay. It was discussed with the Project Manager on how access to the project

would be handled in case of a picket or dispute. Two entrances to the project would be authorized, one for the picket lines and one for the subcontractors not in dispute.

Up to this point Waltes C.M. practices the theoretical applications previously mentioned, but on this project there is a definite lack in formal job progress management. The Field Supervisor monitors what is accomplished on a daily basis, but the lack of an activity listing and a logic diagram creates difficulties in accurately keeping track of the project's progress. The bar chart is one tool that is being used, but the extensive nature of construction and construction management stipulates that more should be done. This bar chart was created by Walters C.M. and does not have any input from the subcontractor. To tell the subcontractor he is behind or ahead of schedule is strictly Walters C.M.'s interpretation.

Another tool monitoring the job progress of the Bank of Westminster is the 'daily logs submitted by the Field Supervisor. See Appendix B. These logs give a day by day account of what occurred on the project and what the subcontractors accomplished. It gives updates of any specific problems with weather, concrete received on the job, and other general problems. The logs will tell what equipment was used, for how long, and why. This not only

helps in monitoring the progress of the job, but is useable documentation for backcharging a subcontractor.

Walters C.M. has the capability to monitor the project progress and utilizes the computer on other projects. On the Bank of Westminster it must be assumed that the smallness of the project plus the release of certain employees created a void.

Walters C.M. has the capabilities of inputting activity listings and having a logic diagram created. They also have the capabilities with this logic diagram to establish resource leveling, scheduling, and cost control. They utilize the PMS-II project management system which is one of the most extensive project management systems for a personal computer. See Appendix C.

In the area of job cost control Walters C.M. again has extensive capabilities in this area. They utilize the Estimax software which can give them 3 levels of cost for any project. Each level will have a breakdown of cost code, description, labor cost, material cost, subcontractors, totals, and dollar per square foot. As the levels get more explicit a breakdown for quantities and units is also used. See Appendix A, Fig. 8. But Walters C.M. doesn't utilize these tools on the Bank of Westminster project.

During the Bank of Westminster project problems of a subcontractor not being able to accomplish part of the work originally contracted for surfaced. This in

turn created a modification to the original agreement. Walters C.M.'s field supervisor was keeping track of the subcontractor's progress and found he was getting behind schedule. The project manager was notified and he in turn got in touch with the subcontractor. The project manager then offered to do a certain part of the work for the subcontractor with Walters C.M. personnel. During the conversation it was agreed what Walters C.M. would do and the maximum amount it would cost the subcontractor. This conversation was referenced by the project manager when he sent a formal letter explaining what Walters C.M. was going to do, how much it would cost the subcontractor, and that a formal Change Order to the contract or a backcharge would be executed. See Appendix A, Fig. 9.

The notification of backcharge was the choice made by Walters C.M. in dealing with this specific subcontractor. In the notification for backcharge is the date, the project name, the subcontractor number which is a key to what subcontractor it is and what kind of work, the cost code, and a description of what exactly Walters C.M. is charging the subcontractor for. See Appendix A, Fig. 10.

After all the work agreed on is done by Walters C.M. a Subcontract Backcharge form is filled out. See Appendix D. The form will have the project name, the subcontract number, the date it was finalized, the cost code, and the notification date. It will describe what

was done by Walters C.M. and the maximum backcharge total agreed on referencing Appendix A, Fig. 9. Attached to the Subcontract Backcharge would be Walters C.M.'s cost distribution summaries, material/equipment invoices, and payroll distribution sheets to substantiate the backcharge. At the bottom is a summary of what money was spent on labor and material. This was then subtracted from the maximum allowable backcharge authorized. As you can see by Appendix D Walters C.M. lost money on this backcharge. An error in the estimate for the maximum cost of this backcharge cost Walters C.M. \$3,089.28.

In conclusion, Walters C.M. utilizes a number of the theoretical approaches to construction management and project control. But in the important areas of progress management and cost management they are not utilizing the tools available within their own organization. Again this could be because of the release of certain people and a lack of manpower to use these tools and also because of the small scope of the Bank of Westminster project as compared to other projects.

## NOTES

<sup>1</sup>Laurence E. Reiner, Handbook for Construction Management (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972), p. 33.

<sup>2</sup>Ibid., p. 73.

<sup>3</sup>Ibid., p. 40.

<sup>4</sup>Ibid., p. 89.

<sup>5</sup>Ibid., p. 93.

<sup>6</sup>Ibid., p. 94.

<sup>7</sup>Ibid., p. 95.

<sup>8</sup>Ibid., p. 98.

<sup>9</sup>Clarence J. Douglas and Elmer L. Munger, Construction Management (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969), p. 146.

<sup>10</sup>Ibid., p. 148.

<sup>11</sup>Ibid.

<sup>12</sup>Samuel P. Oppenheimer, Directing Construction for a Profit (New York, N.Y.: McGraw Hill Book Co., 1971), p. 204.



### PART III

#### CONCLUSIONS

The original projected start date for the Bank of Westminster project was to be in April 1984. However the start date was slipped to July, 1984 due to design related and owner induced delays.

The impact of the delay in starting did not cause the anticipated negative effect from the weather. It was originally thought that not having the building enclosed by December, harsh weather conditions would be a detrimental factor. But the weather has cooperated to date and the enclosure of the building should be completed by the end of 1984.

The organizational structure was found to be very effective and maintained a well defined hierarchy. This organizational structure encouraged lateral communication among the various departments within the organization. The close proximity of the various departments was very beneficial to the decision making process. This close proximity also favored a positive and effective team atmosphere. Changes in the plans or specifications or errors in the plans and specifications could be worked out expeditiously. The closeness encouraged a relaxed atmosphere when dealing with peers or superiors and

created effective group meetings for the day to day problem solving.

The field management of the project was very good and was the main reason for the project's progress. The lack of practical construction management practices, (i.e. logic diagrams, schedules, cost management) hindered the management of this project. The ability of the field management to keep the daily logs accurately was a substantial reason for the home office not being misinformed or the project being mis-managed. During a problem with a subcontractor not being able to accomplish the agreed work that he was contracted for, the accuracy of the records kept in the field and forwarded to the home office helped alleviate a more substantial loss of money than was incurred.

Time schedules and deadlines that contractors were held to were established from the barchart created by management. The contractor can not be legally held to these time constraints if he did not participate in their creation. Establishing a logic diagram with the computer capabilities available at the home office would have maintained a tighter schedule and created substantial documentation for contractor backcharges or change orders. On the Bank of Westminster project the computer capabilities available were not utilized to their potential and caused managerial difficulties. These difficulties were only overcome by the abilities of the field

management and project management assigned to the project.

During the evaluation of the pre-cast erection timelapse film it was found that the crew size for the project was efficient and appropriate. The amount of idle time during the pre-cast erection was minimal and the supervision of the crew was adequate. The handling of the precast pieces at times was redundant and could have been more efficient, but the overall process was good.

The brick veneer erection timelapse was also evaluated and the crew size was sufficient. During one established cycle the amount of idle time was so minimal it didn't account for any time on the crew balance analysis figure.

The evaluation of the activity listing, logic diagram, scheduling, and resource availability and utilization was hindered. The inability of management to utilize the computer software capabilities available created a gap in this report's analysis. A more concise and clear understanding of how actual "real world" management coincides with classroom management theory would have been very helpful in the grasp of theoretical techniques for students. The ability to study a project step by step in theory and then to compare it with reality would have helped close the gap between academia and the real world of construction management.

The usefulness of this report to students will help differentiate between the theoretical application taught in the classroom and what happens on an actual job site. The students will understand that a project can be planned and scrutinized theoretically but that intangibles such as human factors in management, changes in project priorities, or changes in personnel can not always be accounted for in theory. The ability for management to be flexible and to keep clear, concise records is very important, but also management must be able to deal with those intangibles in a practical and professional manner. This report shows how the theoretical and practical application of construction management coexisted on the Bank of Westminster project and what the deficiencies were.

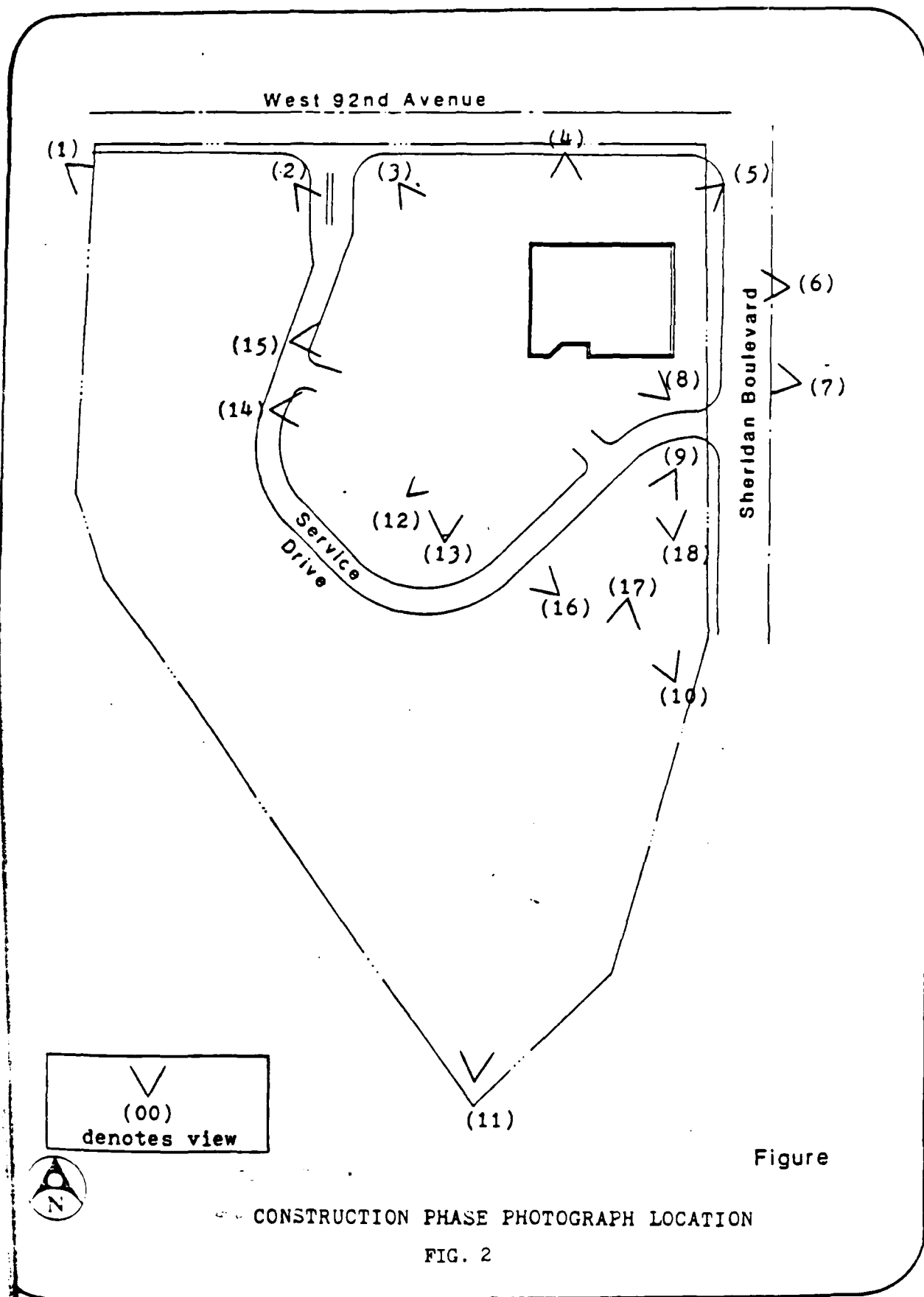
In general the starting date slippage and the loss of some key personnel within the Walters C.M. organization created a severe time factor in the completion of this report. The inability to follow this construction project to its finish reduced the information available for classroom study.

#### PART IV    PHOTOGRAPHS

In conjunction with this project, construction photographs have been taken. The exact location from which they were taken is shown on Figure 2 and description of each view is given.

POSITION	DESCRIPTION
1	View from far North-West property line.
2	View from West side of 92nd Avenue service drive cut out.
3	View from East. Side of 92nd Avenue service drive cut out.
4	View of proposed North elevation.
5	View from far North-West property line (intersection of 92nd Avenue and Sheridan Boulevard).
6	View of proposed East elevation from the far side of Sheridan Boulevard.
7	View from North side of Sheridan Boulevard cut out.
8	View of the proposed South elevation of the Bank.
9	View of existing temporary bank from North side of Sheridan Boulevard cut out.

- 10 View of existing temporary bank from fence line at Sheridan Boulevard.
- 11 View of the site from far Southern Corner.
- 12 View from center of service drive of 5 + 00.
- 13 View of parking log from South edge.
- 14 View from center of service drive at 3 + 00.
- 15 View from center of entry cutout to bank from service drive at 2 + 85.
- 16 View of the proposed South elevation of the bank.



**APPENDIX A**  
**BID DOCUMENTS AND CONTRACT**



RECEIVED JUNE 29 1984

BID FORM

TO: Walters Construction Management, Inc.  
7951 East Maplewood Avenue, Suite 200  
Englewood, Colorado 80111

Date: June 29, 1984

Having examined the plans and specifications (and addenda) prepared by:

Merrick and Company  
10855 East Bethany Drive  
Denver, Colorado 80222

(Road)

and having familiarized ourselves with the site and job conditions, the  
Undersigned does hereby submit the following bid for [Furnishing and  
Installing] ~~[Furnishing Only]~~ ~~[Installing Only]~~ for the following  
classifications of work listed in the Invitation to Bid:

Piped Utilities

For Private Road Improvements, Hyland Office Park, Westminster, Colorado.

Our firm price bid is in the amount of:

Twenty Seven Thousand Two Hundred Thirty Eight dollars (\$ 27,238.00)

Upon receipt of "NOTICE OF AWARD" the Undersigned agrees to execute a formal  
contract for the work within ten (10) days after receipt of such notice.

The Undersigned acknowledges receipt of Addenda: 1, 2, & 3.

The Undersigned has carefully checked all the above figures and understands  
the responsibility for any errors or omissions in making this proposal.

The Undersigned accepts the conditions that any and all bids may be rejected.

The Undersigned further agrees that this proposal shall not be withdrawn for a period of thirty (30) calendar days after the closing time for receipt of bids.

Respectfully submitted:

Name Plumbing Co.

By Pru Title

Address

Dated this 29<sup>th</sup> day of June, 1984.

SEAL (if Bidder is a Corporation)

PROJECT Paul & Wadsworth  
 COMPANY \_\_\_\_\_  
 BY \_\_\_\_\_  
 PHONE \_\_\_\_\_

Rec'd By JLG  
Date 7-16-84  
Time \_\_\_\_\_

Taxes Included - State        Yes        No  
Local        Yes        No

Freight Allowed LOCAL Yes        No         
Yes        No       

Foreign Attaches Installed	<u>      </u> Yes	<u>      </u> No
	<u>      </u> Yes	<u>      </u> No

DESCRIPTION	AMOUNT
Wet Taps - No City Tap Fees Included	
Tap Fees 4" Sewer	
12" X 12" Wet Tap @ Intersection	
Cost of Night Work - O.T. not included	
Permits & Engineer - No	
Asphalt Patching - (No)	
Structures - Face & Pour (or Preset)	
Concrete	
Backfill	
Pipe Utilities - Trenching OK	
- Sprague OK	
- Kick Blocks OK	
Size of Crew (s) One or Two	

A-3

**PHONE BID**

PROJECT Bark of Weston  
 COMPANY Planning  
 BY \_\_\_\_\_  
 PHONE \_\_\_\_\_

Rec'd By CFB  
Date 7-11-34  
Time \_\_\_\_\_

Per Plans and Specs.        Yes        No  
Including Addenda - No.             
Including Alternates        Yes        No

Taxes Included - State	Yes	No
Local	Yes	No
Freight Allowed	Yes	No
Installed	Yes	No

DESCRIPTION	AMOUNT
Debit ~ 395 1/2" x 15" #12,000	
Debit 4" x 4" x 1" Minkide	
→ Revised Price	\$11,702
Schedule on Sun Jan-1 Points Rd	

PROJECT Bank of Westminster  
COMPANY Plumbing  
BY \_\_\_\_\_  
PHONE \_\_\_\_\_

Rec'd By Q102  
Date \_\_\_\_\_  
Time \_\_\_\_\_

Per Plans and Specs.        Yes        No  
Including Addenda - No.                     
Including Alternates        Yes        No

Taxes Included - State	_____	Yes	_____	No
Local	_____	Yes	_____	No
Freight Allowed	_____	Yes	_____	No
Installed	_____	Yes	_____	No

DESCRIPTION	AMOUNT
1) Des. Markete OK	
2) O.T. for Street Car	\$1300
8 hrs	
3)	

July 17, 1984

Mr.

PLUMBING COMPANY

Re: Bank of Westminster  
9191 Sheridan Blvd.  
WCM Project #3700

Gentlemen:

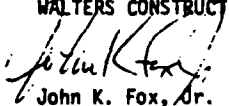
Please let this letter serve as a Letter of Intent and Notice to Proceed based upon your proposal of June 29, 1984 for Road Utilities in the amount of \$97,298 for the above referenced project.

A contract will be mailed to you in the near future for your signature. Please proceed with the ordering of any long lead items, etc. as may be required. Also please proceed with shop drawings as necessary. Please forward Certificates of Insurance to our office when you return your signed contract.

Should you have questions please contact the undersigned.

Very truly yours,

WALTERS CONSTRUCTION MANAGEMENT, INC.

  
John K. Fox, Jr.  
Project Manager

JKF/jpl



**WaltersCM**

A BIL L Walters  
Company

7981 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

FIG. 3

A-6



**WaltersCM**

A Bill L. Walters  
Company

7851 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

MATERIAL SUPPLIERS

PROJECT: Bank of Westminster

CODE NO: 3710-2505

SUBCONTRACTOR: Plumbing Company

DATE: 8-28-84

(Per Provision No. 35 of Subcontract)

If not applicable, please indicate: \_\_\_\_\_

NAME OF MATERIAL SUPPLIER	ADDRESS	PHONE NO.
Waterworks Sales Co.	600 W. 48th Ave Denver 80216	292-6206
Carder Concrete Products	8311 W. Carder Ct. Littleton 80125	794-6303
Mobile Premix Concrete	P.O. Box 5183 TA Denver 80217	534-3165

Immediate notification in writing shall be made to the General Contractor if any of the above suppliers are changed.

Mary L. Signature



**WaltersCM** A Bill L. Walters  
Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

### STANDARD SUBCONTRACT FORM

THIS AGREEMENT, made and entered into this 28th day of August, 1984 by and between Plumbing Company  
doing business as same

with principal office at  
hereinafter called the subcontractor, and Bill L. Walters Construction Management Inc., hereinafter called the contractor  
WITNESSETH:

That the subcontractor and the contractor in consideration of the mutual covenants herein contained hereby agree as follows:

SECTION 1. The subcontractor agrees to furnish all labor, materials, equipment, scaffolding, services and supplies for all work hereinafter described in accordance with the general conditions, plans and specifications prepared by Merrick & Company, hereinafter known as the architect and as described in Section 3 hereof for Private Road Improvements at Hyland Office Park for French Walters Assoc. hereinafter called the owner at 7951 East Maplewood Avenue #300, Englewood, Colorado 80111 in accordance with all conditions of the contract between the owner and the contractor.

SECTION 2. The provisions set forth upon the reverse side hereof, are hereby incorporated into and made a part of this subcontract.

SECTION 3. The subcontractor and the contractor agree that the materials to be furnished and the work to be done by the subcontractor are in accordance with the current contract documents, applicable plans, specifications, divisions and section numbers dated XXXXXXXXXXXXXXXXXXXXXXXXXXXX in Article 16 of the Standard Form of Agreement Between Owner and Contractor dated August 1, 1984 as follows:

1. Provide all necessary labor, materials and equipment required to perform the work which includes but not necessarily limited to the following:
  - a. Approximately 1,005 LF of 12" D.I.P. water main including all valves, bends, tees, thrust blocks, rodding, etc. as noted on the documents, including the relocation/adjustment of two (2) existing fire hydrants and the installation of one (1) new fire hydrant all set properly to finish grade and one (1) 12" check valve. Twelve (12") inch wet tap is included.
  - b. Approximately 1,492 LF of 8" PVC permanent sanitary sewer and approximately 93 LF of 4" PVC temporary sanitary sewer including all bends, wyes, etc., seven (7) precast manholes with poured concrete bases, one (1) 8" sewer tap.
  - c. Approximately 865 LF of 15" RCP storm sewer and approximately 30 LF of 18" storm sewer including four (4) precast manholes with poured bases, three (3) Type R 10 foot inlets, two (2) Type R 5 foot inlets, the removal and re-use of existing materials.
  - d. All excavation and backfill for the above work shall be by subcontractor and shall be performed to the Soils Engineer's requirements.
  - e. All City, State, Federal and RTD taxes are included.
  - f. All work shall be performed as approved by the City of Westminster.
  - g. The cost of all overtime work for making the 12" water tap in Sheridan Blvd. during a weekend night is included, in the amount of \$1,300.00.
  - h. The following shall be excluded from the work:
    1. Development fees for sewer or water.
    2. Payment and Performance bonds.

SECTION 4. The subcontractor agrees: To keep himself thoroughly informed as to the progress of the job; To begin work within seven days after notification by the contractor; To prosecute the work continuously and uninterruptedly with all possible speed; And, to complete the entire work covered by this subcontract as scheduled and agreed upon by subcontractor and contractor. The subcontractor, however, shall not be held responsible for any delays caused by the neglect, delay or default of the general contractor, the owner or any other subcontractor.

SECTION 5. IN CONSIDERATION WHEREOF, the contractor agrees to pay the subcontractor, for the full and faithful performance of his work, the sum of NINETY EIGHT THOUSAND FIVE HUNDRED NINETY EIGHT AND NO/100 dollars (\$ 98,598.00).

In current funds, subject to additions and deductions for changes as may be agreed upon, provided, that no payments are to be made unless the subcontractor's rate of progress, work done and material furnished are satisfactory to the contractor, owner and/or the owner's authorized representative and as herein agreed upon. Payments to be made as follows: 80% monthly on work satisfactorily performed the previous month and the balance 60 days after completion, acceptance and payment by the owner of all work under this contract.

IN WITNESS WHEREOF, the parties hereto have executed this agreement for themselves, their heirs, executors, successors, administrators, and assigns, on the day and year first above written.

ATTEST:

**BILL L. WALTERS CONSTRUCTION MANAGEMENT, INC.**

Assistant Secretary

John K. Fox, Jr. Title Project Manager

Subcontractor's License No.

State Farm Ins. Co.

W.C. Insurance Co.

Pol. No.

7-1-85

Expires

Subcontractor

PLUMBING COMPANY

Continental Ins. Co.

P.L. Insurance Co.

Pol. No.

9-1-85

Expires

Title

Kus

WCM-011 10/88

FIG. 5

A-8



THE SUBCONTRACTOR AND THE CONTRACTOR AGREE THAT THE FOLLOWING PROVISIONS SHALL BE A PART OF THEIR CONTRACT

1. The phrase "General Contract" (a copy of which is on file at the office of the contractor and is available for inspection at all times) shall be deemed to mean the contract between the contractor and the owner with reference to the work described in Section 1 of this subcontract, together with all the provisions, general conditions, plans, drawings, specifications and addenda which are made a part thereof or referred to therein.
2. The subcontractor agrees to furnish all material and to perform all work required by this subcontract strictly in accordance with the general contract.
3. Insofar as the provisions of the general contract do not conflict with specific provisions herein contained, they and each of them are hereby incorporated into this subcontract as fully as if completely rewritten herein. The subcontractor agrees that he will so perform this agreement as not to violate any term, covenant or condition of said general contract. The relationship of the subcontractor hereunder towards the contractor shall be the same as that of the contractor towards the owner under said general contract and the relationship of the contractor hereunder to the subcontractor shall be the same as that of the owner towards the contractor under said general contract.
4. The subcontractor shall submit to the contractor's office on or before the Twenty Fifth (25th) day of each month, requisition for payment covering the value of the work completed to the satisfaction of the owner during that month. If said requisitions are not delivered by the subcontractor as above noted, payment may be withheld for 30 days additional. This contract is payable at the office of the contractor in Englewood, Colorado. Request for final payment must be accompanied by written acceptance of the architect, if requested. Legal right of action shall be in Jefferson County, Colorado.
5. The subcontractor shall furnish the contractor with such partial releases and waivers of lien and claims from his material men and creditors as the contractor may request from time to time on labor and/or material and/or other claims, and final releases and waivers of lien and release of all claims at the time of final payment on this subcontract.
6. The subcontractor shall furnish, if requested by the contractor, sworn affidavits from time to time, which shall state amounts due or to become due, amounts paid, and any other information clearly to indicate the financial condition of the subcontractor insofar as it relates to labor and material furnished, and to be furnished under this subcontract, and the contractor may take such steps as he may deem necessary to protect himself against any claims. If at any time the contractor shall determine that the subcontractor's financial condition has become, in his opinion, unsatisfactory the subcontractor shall furnish satisfactory security to the contractor within three days after written notice to his last known address and in default of furnishing said security, the contractor shall have the option to cancel this contract. In case of such cancellation the rights of the contractor shall be the same as if the subcontractor had failed to perform this contract in whole or in part.
7. The terms of payment provided herein shall not make it incumbent on the contractor to make payments in an amount that would not leave a sufficient balance to cover the retained percentage together with an amount sufficient to satisfy all obligations of the subcontractor for labor, materials, etc., furnished or to be furnished by him under this subcontract.
8. The subcontractor agrees that monies received for the performance of this contract shall be held in trust and used first for labor and materials entering into this work, and said monies shall not be diverted to satisfy obligations of the subcontractor on other contracts.
9. The subcontractor agrees to protect the owner and contractor against all costs or claims for transportation, freight and express, on men, materials and equipment to and/or from the job, and for all other incidental expenses in connection with his work, and to prepay the transportation charges on all materials, etc., shipped.
10. The subcontractor agrees to the scale of wages prescribed in the general contract or the scale prescribed by law in case the general contract provides no such scale. If the subcontractor shall fail in any respect to perform the covenants contained in this paragraph, the contractor shall have the option to cancel this subcontract forthwith. All penalties stated in the general contract shall be applicable hereunder as between the subcontractor and contractor, except as otherwise expressly provided herein. In no event shall the subcontractor pay any wage in excess of that authorized under federal wage or salary regulations.
11. The right is reserved by the contractor to require changes in, deviations from, additions to, and omissions from, the work herein contracted, and the subcontract price shall be adjusted accordingly. Before proceeding with any change, deviation, addition or omission, the subcontractor will first obtain written authorization from the contractor, which authorization will state the amount by which the subcontract will be adjusted, if any. The subcontractor shall have no dealings with the owner or his authorized representatives in regard to changes, extras or omissions in connection with this work, but must deal only with the contractor.
12. Subcontractor agrees to furnish acceptable bond to contractor if so required, and further agrees to carry and pay for workmen's compensation and public liability insurance, with satisfactory limits and in acceptable companies. He shall also carry property damage insurance. The subcontractor shall furnish the contractor with certificates showing names of the carriers, numbers of the policies and expiration dates.
13. The subcontractor agrees to and does hereby accept full and exclusive liability for the payment of any and all contributions or taxes for unemployment insurance and/or old age retirement benefit, pensions or annuities, now or hereafter imposed by the government of the United States, and/or by the government of any state or territory of the United States, which are measured by the wages, salaries or other remunerations paid to persons employed by the subcontractor on work performed under the terms of this subcontract.
14. The subcontractor shall route all equipment and materials to be used in the execution of this contract as designated by the contractor, providing the transportation costs are not increased by so doing. It is expressly agreed that the carrier so designated shall be the agent of the subcontractor and not the agent of the contractor.
15. This subcontract takes precedence over any and all proposals, correspondence, and oral agreements made prior to the date hereof.
16. This subcontract includes all changes, addenda, etc., to date.
17. The subcontractor shall not sublet or assign any portion of this subcontract without the written consent of the contractor first had and obtained.
18. Subcontractor shall not assign, or attempt to assign in any manner at any time any funds accrued or to accrue under this contract without written consent of contractor, and no such assignment shall be binding on contractor unless and until accepted in writing by contractor.
19. The subcontractor agrees to prosecute his work, and the several parts thereof at such times and in such order as the contractor considers necessary to keep the same sufficiently in advance of the other parts of the building and to avoid any delay in the completion of the construction as a whole. The subcontractor shall reimburse the contractor for any loss, damage or extra expense paid or incurred by the contractor which is due to subcontractor's failure to deliver any and all materials as required, or to properly perform any and all work in keeping with the progress of the general construction work, or to properly perform any term, covenant or condition contained in this subcontract, or which is due to the breach of any of the provisions of this subcontract, and it is further agreed that if the subcontractor fails or refuses to proceed with his work as directed by the contractor, or fails to perform said work in accordance herewith, in whole or in part, or fails to perform any term, covenant or condition contained in this subcontract, the contractor may upon two (2) days written notice to the subcontractor's last known address, take any steps he deems advisable to secure necessary labor or materials by contract or otherwise, and may take over all of the subcontractor's equipment, materials, etc., and may prosecute the work to completion. In case the contractor deems this procedure necessary for proper conduct of the work, all monies expended therefore shall be deducted from the contract price herein stated, and if such expenditures exceed the amount otherwise due to the subcontractor hereunder the subcontractor agrees to pay to the contractor on demand the full amount of such excess, together with interest thereon at the rate of six per cent per annum, until paid.
20. The subcontractor shall promptly amend and make good any defective materials and/or workmanship to the entire approval and acceptance of the owner and/or architect or their authorized representatives. Should the subcontractor refuse or neglect to proceed at once with the correction of rejected or defective materials and/or workmanship after receiving notice to do so, it is agreed that the contractor shall have the right and power to have the defects remedied or changes made at the expense of the subcontractor. And the subcontractor agrees to pay to the contractor on demand any and all loss and/or expense paid or incurred by the contractor in remedying such defects and/or making such changes, together with interest thereon at the rate of six per cent per annum, until paid.
21. The subcontractor shall effectively secure and protect his materials and work, and shall bear and be liable for all loss and/or damage of any kind in connection therewith at any time prior to the final completion and acceptance thereof, unless said loss or damage is caused by direct negligence of the contractor and subject to the provisions of Section 25 hereof, as they may apply. The subcontractor shall reimburse the contractor on demand for any breakage or other damage to other work or materials occasioned by the subcontractor in the execution of this subcontract.
22. If the subcontractor deems that surface or work to which his work is to be applied or affixed is unsatisfactory or unsuitable, written notification of said condition shall be given to the contractor, otherwise no consideration will be given to claims for extra compensation or non-responsibility in connection therewith.
23. The subcontractor shall provide at his own expense, whatever storage sheds, work shops and offices are necessary for the performance of this subcontract, and shall remove same and thoroughly clean the premises at the completion of the work.
24. The subcontractor shall clean up and remove from the site as directed by the contractor, all rubbish and debris resulting from his work. Also he shall clean up to the satisfaction of the inspectors, all dirt, grease, marks, etc., from walls, ceilings, floors, fixtures, etc., deposited or placed thereon as a result of the execution of this subcontract. If the subcontractor refuses or fails to perform this cleaning as directed by the contractor, the contractor shall have the right and power to proceed with said cleaning, and the subcontractor will on demand repay to the contractor the actual cost of said labor plus percentage of such cost to cover supervision, insurance, overhead, etc. It is also agreed and understood the subcontractor is to do all cutting and patching that comes in connection with his work.
25. It is understood and agreed it has been the practice of the general contractor to carry builders' risk fire insurance in the amount of his estimate or full insurance to insurable value, including subcontractors, to the extent that such insurance is carried by the general contractor on the general contract, the subcontractor will have an interest in the insurance policy; however, the provisions of this section do not make it mandatory upon the general contractor to carry any insurance whatsoever for the benefit of the subcontractor. Subcontractor agrees he will assume the responsibility to determine whether builders' risk insurance is in force.
26. In the event the general contractor should elect to carry builders' risk insurance, and only in such event, the subcontractor agrees to submit immediately, for the purpose of determining values under the insurance coverage, a complete breakdown of this contract price showing materials, labor, expendable tools, supplies or any other thing or article of value, the cost of which is included in the contract price stated in this agreement.
27. The subcontractor shall furnish promptly all samples, lists, drawings, cuts, schedules, etc., required in connection with his work, but approval of same does not relieve him of his responsibility of complying with the requirements of the drawings and specifications. All transportation costs on samples and drawings furnished by the subcontractor shall be paid by him.
28. The subcontractor shall furnish all guarantees, bonds, operating instructions, etc., as required by the specifications.
29. If the subcontractor makes use of the contractor's hoist, mixer or any other equipment, or hot water, gas, electricity, water, etc., an agreed price in writing must be made with contractor's superintendent or settled strictly by contractor's charge.
30. If at any time any controversy shall arise between the contractor and the subcontractor with regard to any matter or thing involved in this subcontract, and which the parties hereto do not promptly adjust and determine, or which the owner or his authorized representative cannot decide to the satisfaction of both parties hereto, then the written orders of the contractor shall be followed and said controversy shall be decided by arbitration at the end of the work, and before final settlement is made between the contractor and the subcontractor. The rules of the American Arbitration Association, then in effect shall govern.
31. The subcontractor shall hold and save the contractor and owner harmless from any liability including attorney's fees, costs and expenses, for or on account of any patented or unpatented invention, article or appliance manufactured or used in the performance of this subcontract, including their use by the owner.



31. The subcontractor shall not place on the work any equipment of which he is not sole owner unless he obtains written permission from the contractor.
32. When labor only is furnished by the subcontractor, subcontractor agrees to use Contractor's material without waste, and agrees to pay for any material ruined or damaged on account of negligence or carelessness. Unless otherwise stated, when material is furnished by contractor, same shall be delivered to the curb line of the building which shall constitute delivery. Quantities of material used daily shall be reported to contractor's superintendent, and empty sacks banded and placed in contractor's warehouse.
33. The subcontractor agrees to cooperate to the fullest extent with contractor's superintendent in charge, and further agrees to remove any workmen immediately that are not satisfactory to contractor or architect.
34. If the project is government or government aid, it is agreed that all requirements with regard to labor priority, maximum hours of labor, scales of wages to all skilled, semi-skilled and unskilled workmen, and the method of payment or any other provision, will be fulfilled. Everything required of the contractor in this connection is applicable to this subcontract. Any and all certificates of compliance required by the government will be furnished on demand.
35. Each subcontractor must submit on a form provided by the contractor, a list of all subcontractor's suppliers of labor and materials whose quotations he has used in the preparation of his bid and whose services he proposes to use in construction of the project.
36. The subcontractor is an independent contractor under the terms of this contract, notwithstanding the fact that the contractor reserves the right to supervise the work and to make suggestions relative to the satisfactory completion thereof.
37. Time is of the essence of this contract.
38. The subcontractor hereby represents to the contractor that he is, and will comply, to the course of this contract with all federal law, state law and applicable county ordinances relating to workmen's compensation insurance, safety and health, wage and hour laws, state sales and use taxes, federal excise and transportation taxes, local building and zoning codes and federal and state withholding taxes, and any fine or penalty assessed against the contractor caused by violation done by the subcontractor shall be paid by the subcontractor.
39. Subcontractor hereby agrees to defend at its own cost and to indemnify and hold harmless the contractor, its agents and employees from any and all liability, damages, losses, claims and expenses, howsoever caused, resulting directly or indirectly from or connected with the performance of this agreement, irrespective of whether such liability, damages, losses, claims and/or expenses were actually or allegedly caused through the negligence of contractor or any of its agents, employees or other subcontractors, excepting only such liability, damages, losses, claims and expenses as shall have been occasioned by the sole negligence of the contractor, its agents and employees.
40. Although drawn by the contractor, this agreement shall, in the event of any disputes over its meaning or application, be interpreted fairly and reasonably and neither more strongly for or against either party.
41. Notwithstanding all other provisions of this subcontract, Subcontractor agrees to submit partial payment requests in such form and copy as Contractor may require, and to deliver same to Contractor's general office by the twenty-fifth (25th) day of the month. Subcontractor agrees that his monthly partial payment request will include only work and materials in place or delivered to the site or stored off-site under conditions satisfactory to the Contractor prior to the last day of the month. Monthly partial payments are due not later than thirty (30) days after due date for partial payment requests and shall be made within five (5) days of receipt of payment from the Owner. When final payment is due, Subcontractor shall submit invoice for final payment, clearly marked "Final Payment".
42. Subcontractor shall be responsible for clean-up of rubbish and debris resulting from his work on a daily basis, all as verbally directed by the general contractor.
43. Subcontractor agrees that, in the event of any picket or other form of labor dispute at the construction site, whether that dispute or picket is in connection with the Contractor, Subcontractor, or any other contractor or subcontractor on this construction site, Subcontractor will continue to perform the work required herein without interruption or delay. In the event Subcontractor fails to continue the performance of the work included herein, without interruption or delay, because of such picket or other form of labor dispute, the rights accorded the Contractor by Provision #19 elsewhere herein shall apply.



# ACORD CERTIFICATE OF INSURANCE

7/23/84

## PRODUCER

The Linden Company  
10 Lakeside Lane, #109  
Denver, Colorado 80212

RECEIVED

JUL 26 1984

## INSURED

Wanna Plumbing Company

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

## COMPANIES AFFORDING COVERAGE

COMPANY LETTER **A** Transportation Insurance Co.  
COMPANY LETTER **B** Ranger Insurance Company  
COMPANY LETTER **C**  
COMPANY LETTER **D**  
COMPANY LETTER **E**

## COVERAGES

THIS IS TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH POLICIES.

CO- TYPE	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIABILITY LIMITS IN THOUSANDS	
					EACH OCCURRENCE	AGGREGATE
A	GENERAL LIABILITY	TBP042093546	9/1/83	9/1/84	BODILY INJURY	\$ 500
	<input checked="" type="checkbox"/> COMPREHENSIVE FORM				PROPERTY DAMAGE	\$ 250
	<input checked="" type="checkbox"/> PREMISES/OPERATIONS				BI & PD COMBINED	\$
	<input checked="" type="checkbox"/> UNDERGROUND				PERSONAL INJURY	\$ 500
	<input checked="" type="checkbox"/> EXPLOSION & COLLAPSE HAZARD					
	<input checked="" type="checkbox"/> PRODUCTS/COMPLETED OPERATIONS					
	<input checked="" type="checkbox"/> CONTRACTUAL					
A	AUTOMOBILE LIABILITY	BUA042093577	9/1/83	9/1/84	BODILY INJURY PER ACCIDENT	\$ 250
	<input checked="" type="checkbox"/> ANY AUTO				BODILY INJURY PER OCCUR	\$ 500
	<input checked="" type="checkbox"/> ALL OWNED AUTOS (PRIV. PASS.)				PROPERTY DAMAGE	\$ 500
	<input checked="" type="checkbox"/> ALL OWNED AUTOS (OTHER THAN PRIV. PASS.)				BI & PD COMBINED	\$
	<input checked="" type="checkbox"/> HIRED AUTOS					
B	EXCESS LIABILITY	To Be Determined	7/1/84	7/1/85	BI & PD COMBINED	\$ 1000
	<input checked="" type="checkbox"/> UMBRELLA FORM					
	WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY	
					\$ (EACH ACCIDENT)	
					\$ (DISEASE POLICY LIMIT)	
	OTHER				\$ (DISEASE EACH EMPLOYEE)	

## DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

Bank of Westminster

## CERTIFICATE HOLDER

Walters C.M.  
7951 East Maplewood Ave., Suite 200  
Englewood, Colorado 80111

## CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL -30-DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

*John Ann Stunkel*

ACORD 25 (2/84)

III/ACORD CORPORATION 1984



CERTIFICATE OF INSURANCE  
issued by the  
STATE COMPENSATION INSURANCE FUND  
950 BROADWAY  
DENVER, COLORADO 80203  
DENVER PHONE: (303) 866-2658



TO WHOM IT MAY CONCERN:

This is to certify that this department has issued a Standard Workmen's Compensation and Employer's Liability Policy as described below covering the liability imposed upon subject employers by the Workmen's Compensation Act of Colorado, said policy being in good standing as of this date.

POLICY NUMBER: 055 -0 AUGUST 23, 1984

POLICY PERIOD: JULY 1, 1984 to JULY 1, 1985

INSURED: PLUMBING CO

DATE OF ORIGINAL ISSUE: AUGUST 9, 1968

QUARTERLY ADJUSTMENT

\*\* FOR ADDITIONAL COPIES, THIS CERTIFICATE MAY BE REPRODUCED. \*\*

All policies are subject to the following provision of the Workmen's Compensation Act with respect to cancellation:

Section 8-54-114. If any employer shall be in arrears for more than twenty days in any payment required to be made by him to the State Compensation Insurance Fund as provided by this Act, he shall by virtue of such arrangement be in default of such payment and any policy issued to him by said Fund shall thereupon be cancelled without notice as of the effective date or renewal date of said policy.

STATE COMPENSATION INSURANCE FUND

*Joyce Meyers*  
JOYCE MEYERS, ADMINISTRATIVE CLERK

*gh*

01041P1 FORM #0267 07-19-34

Walters CM  
A Bill L. Walters Company  
7951 E. Maplewood Av., #200  
Englewood, Colorado 80111

BUDGET COST ESTIMATE  
CitiCorp Diners Club  
Denver, Colorado  
By: JRM 9/28/84

Proj # 844-0000  
SQ FT 250,000  
09/24/84  
Level 1 Report

Code	Description	Labor	Material	Subs/oth	Total	\$/SF
.1	ARCHITECTURAL/STRUCTURAL			7692728	7,692,728	30.77
.2	MECHANICAL SYSTEMS			3498150	3,498,150	13.99
.3	ELECTRICAL SYSTEMS			2972900	2,972,900	11.89
.4	SPECIAL SYSTEMS					
.5	SPECIAL EQUIPMENT					
.6	SPECIAL FINISHES					
.7	SITework/UTILITIES			1372340	1,372,340	5.49
.8	GENERAL CONDITIONS			805269	805,269	3.22
.9	DESIGN OVERHEAD			1360000	1,360,000	5.44
1.0	PERFORMANCE BOND			78057	78,057	.31
1.1	DESIGN/BUILD FEE			450000	450,000	1.80
Project Total				18229444	18,229,444	72.92

Walters CM  
A Bill L. Walters Company  
7951 E. Maplewood Av., #200  
Englewood, Colorado 80111

BUDGET COST ESTIMATE  
CitiCorp Diners Club  
Denver, Colorado  
By: JRM 9/28/84

Proj # 844-0000  
SQ FT 250,000  
09/24/84  
Level 2 Report

Code	Description	Labor	Material	Subs/oth	Total	\$/SF
<b>.1 ARCHITECTURAL/STRUCTURAL</b>						
.101	Clear at Building			305852	305,852	1.22
.102	Foundation System			342764	342,764	1.37
.103	Structural System			2274730	2,274,730	9.10
.104	Slab-On-Ground			247034	247,034	.99
.105	Roofing System			296367	296,367	1.19
.106	Exterior Walls			1589940	1,589,940	6.36
.107	Vertical Circulation			236500	236,500	.95
.108	Interior Walls			625669	625,669	2.50
.109	Floor Finishes			1160818	1,160,818	4.64
.110	Ceiling Finishes			298240	298,240	1.19
.111	Wall & Column Finishes			185844	185,844	.74
.112	Specialty Items			128970	128,970	.52
<b>TOTAL</b>				<b>7692728</b>	<b>7,692,728</b>	<b>30.77</b>
<b>.2 MECHANICAL SYSTEMS</b>						
.201	Heating, Vent & A.C.			2921050	2,921,050	11.68
.202	Plumbing System			350200	350,200	1.40
.203	Fire Protection System			226900	226,900	.91
.204	Control System					
.205	Special Mechanical					
.206	Temporary Heating					
<b>TOTAL</b>				<b>3498150</b>	<b>3,498,150</b>	<b>13.99</b>
<b>.3 ELECTRICAL SYSTEMS</b>						
.301	Fixtures & Lamps					
.302	Circuits & Devices					
.303	Main Feeders & Secondary					
.304	Switchgear & Transformer					
.305	Special Electrical					
.306	Temporary Electrical					
.307	Electrical Complete			2972900	2,972,900	11.89
<b>TOTAL</b>				<b>2972900</b>	<b>2,972,900</b>	<b>11.89</b>

Walters CM  
A Bill L. Walters Company  
7951 E. Maplewood Av., #200  
Englewood, Colorado 80111

BUDGET COST ESTIMATE  
CitiCorp Diners Club  
Denver, Colorado  
By: JRM 9/28/84

Proj # B44-0000  
SD FT 250,000  
09/24/84  
Level 3 Report

AC	Description	Quan.	UN	Labor	Material	Subs/oth	Total
<b>.101 Clear at Building</b>							
	Clear&Grub @ Bldg.	2000.00	CY			.50	1,000
	Mass Bldg. Excav.	26000.00	CY			2.50	65,000
	Grade Beam Excav.	2100.00	CY			4.00	8,400
	Elev. Pit Excav.	60.00	CY			8.00	480
	Column Cap Excav.		CY				
	Backfill & Compact	11394.00	CY			8.50	96,849
	4Ft. Struct. Fill	15852.00	CY			6.00	95,112
	Soil Investigation						
	Compaction Tests	20.00	EA			150.00	3,000
	Perimeter Drainage	2000.00	LF			16.00	32,000
	Under Floor Drain		LF				
	Clean Walks/Street	1.00	LS			1200.00	1,200
	Cooling Tower Sump	192.00	CY			8.00	1,536
	Reces'd. Chiller Rm	510.00	CY			2.50	1,275
	<b>TOTAL</b>					<b>305852</b>	<b>305,852</b>
<b>.102 Foundation System</b>							
	18" Drilled Piers	16.00	EA			700.00	11,200
	30" Drilled Piers	158.00	EA			1050.00	165,900
	36" Drilled Piers		EA				
	Pilasters @ Wall	58.00	EA			300.00	17,400
	Pier Caps		EA				
	Equip. Curbs	3500.00	Sf			5.00	17,500
	Grade Beams	7200.00	SF			11.50	82,800
	Sump Pits	1.00	EA			500.00	500
	Cooling Tower Sump	600.00	SF			11.50	6,900
	Elevator Pits	467.00	SF			11.50	5,371
	Waterproofing	20200.00	SF			.60	12,120
	Perim. Insulation	1260.00	SF			.80	1,008
	Winter Protection	1.00	LS			12000.00	12,000
	Cool Tower Fndn.	130.00	SF			11.50	1,495
	Generator Pad	1200.00	SF			3.75	4,500
	Transformer Pad	72.00	SF			3.75	270
	Concrete Testing	1.00	LS			2000.00	2,000
	Pier Inspection	3.00	WK			600.00	1,800
	<b>TOTAL</b>					<b>342764</b>	<b>342,764</b>
<b>.103 Structural System</b>							
	Structural Steel	1000.00	TN			1050.00	1,050,000

- 1 -

FIG. 8

August 15, 1984

Mr. Plumbing Company

Re: Private Road Improvements  
Hyland Office Park

Dear Tom:

This is to confirm our telephone conversations regarding Walters CM personnel performing work on the storm inlets (5 each) and the storm drain RCP.

As per our discussion of August 10, 1984 Walters CM shall construct the 10 ft. and 5 ft. inlets. The manhole rings, ladder rungs and grates will be provided by and installed by Walters CM. Excavation and backfill shall be by . The amount charged to for this work shall be cost of the work plus 7% and shall in no case exceed \$2,016.00 per each.

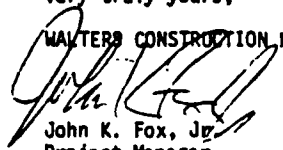
The storm drain line RCP shall be installed with our laborers at an hourly rate of \$11.70, \$12.35, and \$13.33 which includes all payroll taxes, etc. All equipment and material for this portion of the work shall be provided by Plumbing.

Upon Completion of the work, a Change Order to your contract or a Backcharge will be executed to finalize this agreement.

Should you have questions, please contact the undersigned.

Very truly yours,

WALTERS CONSTRUCTION MANAGEMENT, INC.

  
John K. Fox, Jr.  
Project Manager

JKF/jpl

cc: 3700-3710



**WaltersCM** A Bill L. Walters  
Company

7561 East Maplewood Avenue, Suite 300, Englewood, Colorado 80111, (303) 770-4300



## NOTIFICATION OF BACKCHARGE

**SUBCONTRACTOR:**

Plumbing Company

Date 8-27-84 Project Private Road Improvement  
Hyland Office Park

Subcontract Date 8-27-84Subcontract # 3710-2505Backcharge Cost Code 19000

**Cost Code Description** Utilities

**Gentlemen:**

Under the terms of the above referenced subcontract agreement, Paragraphs 19, 21, & 24, Walters CM is exercising its right and proceeding with the following work:

Per mutual agreement of both parties - Barnekow Construction will provide P & H tracked backhoe for the purpose of excavating the water and sewer lines for Plumbing.

The cost of \$60 per hour standard rate shall be deducted from the Contract for all tickets signed by Watters CM and Plumbing.

The above work is being completed on a time & material basis. Upon completion, a formal backcharge to your subcontract will be issued. The backcharge will be supported with documented costs.

**Bill L. Walters Construction Management, Inc.**

By John K. Fox, Jr.  
John K. Fox, Jr./Project Manager

JKF/jp1

White - Subcontractor • Yellow - Project Manager • Pink - Accounting

WCHA-000 10/22/99

**APPENDIX B**

**DAILY LOGS**



# DAILY LOG

PROJECT Hwy 100 Bank of Westminster DATE 7-23-84

WEATHER CONDITIONS SIGNATURE Boys 2.0 mal  
 Temperature: High 95 Low \_\_\_\_\_  
 Precipitation: Inches \_\_\_\_\_ Rain \_\_\_\_\_ Snow \_\_\_\_\_  
 Condition: Clear X Partly Cloudy \_\_\_\_\_ Overcast \_\_\_\_\_

SAFETY  
 Accidents: Personal \_\_\_\_\_ Equipment \_\_\_\_\_ Public Liability \_\_\_\_\_ Property Damage \_\_\_\_\_  
 Explain: \_\_\_\_\_

MATERIALS		SUBCONTRACTORS	
Cost Code	Ticket No.	Company	No. Men
_____	_____	1 SURVEY CREW	- 2
_____	_____	2 WCM	- 5
_____	_____	3	
_____	_____	4	
_____	_____	5	
_____	_____	6	
_____	_____	7	
_____	_____	8	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS
BACKHOE LOADER RENT	7/23	7/23	POWER RENTAL	REMOVE FENCE

- 1) REMOVED SPLIT RAIL & STOCKADE FENCE. - fence to corner; Piled to yard
  - 2) REMOVED 5 SIGNS
  - 3) REMOVED VALVE BOXES, CHECK VALVES, SPRINKLER HEADS
  - 4) 11:00 Tom O'DONNELL MEETING ON SITE WORK. SCHEDULE 7/30/84
  - 5) SURVEYORS SET STATIONS; CUT & FILL ON PERMANENT ROAD.
  - 6) BLUE STAKES CABLE, PHONE, GAS, ELECTRIC SHOWED UP. LOCATIONS OK
  - 7) CALLED REPTERS LANDSCAPE. DIDN'T SHOW UP TODAY.
  - 8) TALKED TO MURPHY EXCAVATION. CONFIRM WEDNESDAY START.
  - 9) WCM YARD - USED 2 TRUCKS @ HRS FROM 'HEATER' FOR FENCE REMOVAL - Hauled fence to corner.
  - 10) WORKED CREW @ HRS.
  - 11) REMOVED 1 flagpole - To yard
  - 12) REMOVED 4 curb wheel stops - Haul to yard
- JK/BM PAUL/BM KEVIN/BM BRIAN/BM ED/BM

WCM-015

WHITE - Project Manager

CANARY - Superintendent



# DAILY LOG

PROJECT WESTMINSTER BANK DATE 7-30-84

## WEATHER CONDITIONS

Temperature: High 95 Low 62  
Precipitation: Inches — Rain — Snow —  
Condition: Clear X Partly Cloudy X Overcast —

## SIGNATURE

Ray D. Neal

## SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —  
Explain: —

## MATERIALS

Cost Code

Ticket No.

## SUBCONTRACTORS

Company

No. Men

1. WCM-2  
2. SUEVEY - 2 HALF DAY  
3. MURPHY - BLADE/OPER  
4. 613 /OPER  
5.  
6. 966 LOADER/OPER  
7. SHEEPSFOOT 1/2 DAY  
8. 980 LOADER 1/4 DAY

ODONNELL - 1 - 4MAS  
1 - LAB  
1 - BACKHOE

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS
—				
—				
—				

- 1) WASSANAAR SHOWED UP FOR COMPACTION TESTS.
- 2) O'DONNELL SHOWED UP. JUST MOVED PIPE IN. REMOVED 30' LF OF EXISTING 18" RCP @ 92 & SHERIDAN BROUGHT OUT LITTLE JD HOE. THEY ARE BRINGING OUT A TRACK HOE.
- 3) TALKED TO AL WASSANAAR ON USING SOURCE IN A CONFINED TRENCH FOR UTILITY WORK. NO PROBLEM AS LONG AS IT DOESN'T DRAIN INTO THE BUILDING.
- 4) FRED MURPHY HAS 8 HRS EXTRA ON 166 BLADE FOR BRINGING IN EXTRA FILL IN ROAD DUE TO SURVEY PROBLEMS ON GRADE.
- 5) EXISTING DETENTION POND ON CORNER NEEDS TO BE MUCKED OUT, USING BARNEKOW BACKHOE. CHEAPER THAN MURPHY. MURPHY WANTED \$105/HOUR; \$210 MOBILIZATION. BARNEKOW \$60/HR.
- 6) AL WASSANAAR APPROVED USING ASPHALT IN FILL @ DETENTION POND.
- 7) STARTED TO DETOUR TRAFFIC ON TEMPORARY ROAD AND TEAR UP BLDG. SITE. ON SCHEDULE FOR CAISSONS ON MONDAY.
- 8) WE HAVE RECEIVED RAIN EVERY NIGHT FOR PAST WEEK. REAL PROBLEM WITH EXISTING DETENTION POND. BUILDING CORNER RIGHT OVER POND.

WCM-015

WHITE - Project Manager

CANARY - Superintendent

**WaltersCM**A DHI L Walters  
Company

7851 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

**DAILY LOG**PROJECT WESTMINSTER BANK DATE 8/6/84 MONDAY

## WEATHER CONDITIONS

SIGNATURE Ray L. O'NeilTemperature: High 90 Low 60  
Precipitation: Inches 4.2" Rain X Snow \_\_\_\_\_  
Condition: Clear \_\_\_\_\_ Partly Cloudy YES Overcast \_\_\_\_\_

## SAFETY

Accidents: Personal \_\_\_\_\_ Equipment \_\_\_\_\_ Public Liability \_\_\_\_\_ Property Damage \_\_\_\_\_  
Explain: \_\_\_\_\_

## MATERIALS

Cost Code

Ticket No.

## SUBCONTRACTORS

Company

No. Men

1. MEREDITH - RIG/2 OPER  
2. WCM - 6  
3. SUEVEY - 2  
4. DENVER REEL - 3  
5. O'DONNELL - 1-4 MAN  
6. 3-LAB  
7. 1-OPER/HOR  
8.

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS
NONE				

1) STARTED CAISSONS.	DIAMETER	LOCATION	DRILLING LENGTH	CONCRETE
MEREDITH.	36"	3.8-G	30'	7.51
	36"	5-G	30'	7.51
	36"	8-G	32'	8.16
	36"	10-G	32'	8.16
	30"	10-D	31'	5.09
	30"	10-C	32'	5.18
	TOTAL		188' LF	41.61 CY

- 2) POURED 44 CY. 5% WOOD CHIP.
- 3) DENVER REEL 3/4 DONE WITH CAISSON CAGES.
- 4) TALKED TO MURPHY ON GETTING LOADER OUT HERE. PROBLEM. THURSDAY IS BEST. NEXT WEDNESDAY.
- 5) O'DONNELL ON 8" SANITARY UP TO MANHOLE #5.

WCM-015

WHITE - Project Manager

CANARY - Superintendent



# DAILY LOG

PROJECT WESTMINSTER BANK DATE 8/13/84

WEATHER CONDITIONS SIGNATURE Page O'Neil  
Temperature: High 95 Low 60  
Precipitation: Inches 0 Rain 0 Snow 0  
Condition: Clear 0 Partly Cloudy 0 Overcast 0

SAFETY  
Accidents: Personal 0 Equipment 0 Public Liability 0 Property Damage 0  
Explain: 0

MATERIALS		SUBCONTRACTORS	
Cost Code	Ticket No.	Company	No. Men
		1. WCM-6	
		2. SHURM-2	
		3. O'DONNELL - 1-9 MAN	Denver Reel - 3
		4. 3-CAB	
		5. 1-OPER/MOR	
		6. MEREDITH - 1-9 MAN	
		7. 1-RIG/OPER	
		8. 1-OILER	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

	DIA	LOCATION	DRILL LENGTH	EST. CONCRETE
1) HELD SAFETY MEETING.				
2) MEREDITH ON 5TH DAY OF DRILLING -	36"	1-E	27'	7.21
ON THE 4-MAN BACK ON JOB.	36"	1-F	27'	7.08
3) O'DONNELL ON 12" WATER, UP TO STATION	24"	PLAZA	17'	2.50
4220, DISCUSSED STARTING 15" RCP	24"	PLAZA	18'	2.70
STORM ON WEDNESDAY, NO MANPOWER SO	24"	PLAZA	17'	2.60
WORKING OUT A DEAL WITH OUR	24"	2-E	16'	1.90
LABORS <del>DOING</del> WORK.	42"	4-D	30'	13.60
4) TALKED TO SUBURBAN ON CONCRETE	36"	3-D	33'	8.70
CONSISTENCY, SLUMP & AIR CHANGE.	TOTALS → 194'			46.29
NEED A CLEAN MIXER DRUMS, YIELDS				
PER TRUCK RUNNING SHORT.				
5) ORDERED <del>END</del> PUMP FOR INLETS FROM				
CONCRECO, DELIVERY A.M. ON 8/26/84.				

**WaltersCM**A Bill L. Walters  
Company

7961 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

**DAILY LOG**PROJECT Westminster Bank DATE August 28, 1984**WEATHER CONDITIONS**Temperature: High 90 Low 60  
Precipitation: Inches 0 Rain 0 Snow 0  
Condition: Clear YES Partly Cloudy 0 Overcast 0SIGNATURE [Signature]**SAFETY**Accidents: Personal 0 Equipment 0 Public Liability 0 Property Damage 0  
Explain: 0**MATERIALS**

Cost Code

Ticket No.

**SUBCONTRACTORS**

Company

No. Men


10	O'DONNELL - 1-9 MAN	
2	1-CAB	
3	2-HOP/OPER	
4	WCM - 8	
5	FORMBUILDERS - 4	
6	D&D - 8	
7		
8		

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) D&D STARTED CURB & GUTTER. POURED 400 CF
- 2) STARTED BACKFILL ON TIE BEAMS.
- 3) POURED 52 CY ON TIE BEAMS @ TOWER 1 & ELEVATOR.
- 4) Reviewed schedule with Murphy. Says no problem but will have to go. HARD TO NAIL MURPHY TO A SCHEDULE. TRY USING SPEED MEMOS.
- 5) O'Donnell tying in check valve & fire hydrant. No problems yet. Should be installed up & topped in by Wednesday.
- 6) Scheduled VAULT STEEL FOR DELIVERY ON 8/29 @ 7:00.
- 7) O'DONNELL IS USING OUR CABLE FOR BACKFILL AROUND THE INLETS.

WCM-015

WHITE - Project Manager

CANARY - Superintendent

**WaltersCM**A Bill L. Walters  
Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

**DAILY LOG**PROJECT WESTMINSTER BANK DATE 9/4/84WEATHER CONDITIONS SIGNATURE Page 20702Temperature: High 85 Low 50  
Precipitation: Inches — Rain — Snow —  
Condition: Clear YES Partly Cloudy — Overcast —**SAFETY**Accidents: Personal — Equipment — Public Liability — Property Damage —  
Explain: —**MATERIALS**

Cost Code Ticket No.


**SUBCONTRACTORS**

Company	No. Men
1. WCM - 8	Denver Reel - 2
2. O'DONNELL - 1 - 4 MAN	
3. 2 - OPER/HOE	
4. 2 - LAB	
5. DTD - 4	
6. MURPHY - 1 - OPER/BLADE	
7. 1 - LINDER / OPER 1/2 DAY	
8. FORM BUILDERS - 4	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) Started 12" water @ 92nd & Sheridan at 8:30. Half done. just rock base, we will grave Wednesday. Found abandoned phone cable & unmapped electric utilities.
- 2) Murphy ditched down up with blade & loader on Northminster started work. Worked 8 HRS. Murphy showed up with blade @ 10:00. Loader @ 10:30. Loader broke down @ 12:30. No loader the rest of the day.
- 3) O'Donnell advising Markles is dead.
- 4) Schedule grade beam pour on two half of building for Thursday @ 12:00.
- 5) Ralph Barr, inspector showed up to receive wall @ 1 & 2 behind back wall. No answer yet as to procedure. Talking about fill/ditch.
- 6) Backfilled grade beams & tie beams.
- 7)

WCM-015

WHITE - Project Manager

CANARY - Superintendent



**WaltersCM**A Bill L. Walters  
Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

942

**DAILY LOG**PROJECT WESTMINSTER BANK DATE 9/10/84

## WEATHER CONDITIONS

Temperature: High 85 Low 60  
Precipitation: Inches — Rain — Snow —  
Condition: Clear YES Partly Cloudy — Overcast —SIGNATURE Raymond O'Donnell

## SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —  
Explain: —

## MATERIALS

Cost Code

Ticket No.

## SUBCONTRACTORS

Company

No. Men

1. WCM-8
2. O'DONNELL - 1-1 MAN
3. 1-LAB
4. 2-HAUL/OPER
5. STRESSCON - 4
6. MURPHY - 1-LOADER/OPER
7. FORM BUILDERS - 4

RIVERA - 1

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) CORING COMPANY SHOWED UP @ 8:30. JOHN CARLSON ALSO. FINISH DRILLING HOLES @ TIE BEAMS FOR STRESSCON.
- 2) STRESSCON STARTED TRUCK & CRANE READY @ 8:00.
- 3) MURPHY - 2 TRUCKS TO HAUL EXCESS DET, LOADER.
- 4) SHIFTED TRAFFIC ON PERMANENT ROAD.
- 5) TALKED TO HART & BROWN (CIVILS). SCHEDULE FOR 9/17. NEED SHOP DWGS APPROVED.
- 6) SCHEDULED FOR BANK VAULT FLOOR POUR ON TUESDAY.
- 7) POSSIBLE LOW CONCRETE BREAKS @ TIE BEAM FOR ELEVATOR & STAIR #1. POSSIBLY BREAK & TEAR OUT. WILL KNOW ON TUESDAY.
- 8) STRESSCON SET 8 PIECES.
- 9) REBAR FOR STRUCTURAL PLAZA SHOWED UP. WCM UNLOADED.
- 10) POURED WALLS FOR TYPE R 10' INLET ON SHERIDAN.
- 11) TALKED TO MURPHY ABOUT SMALL BACKHOE LOADER FOR JOB, SAID ONE WASN'T AVAILABLE.
- 12) MEL HELPED O'DONNELL FINISH MANHOLES.
- 13) DETOUR RTR STARTED @ 3:00 TIEING VAULT STEEL.

WCM-015

WHITE - Project Manager

CANARY - Superintendent

**WaltersCM**A Bill L. Walters  
Company

7851 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

9/14

**DAILY LOG**PROJECT WESTMINSTER BANK DATE 9-14-84

## WEATHER CONDITIONS

SIGNATURE Page 207022Temperature: High 32 Low 30  
Precipitation: Inches 0 Rain 0 Snow 0  
Condition: Clear 0 Partly Cloudy Yes Overcast Yes

## SAFETY

Accidents: Personal 0 Equipment 0 Public Liability 0 Property Damage 0  
Explain: 0

## MATERIALS

Cost Code

Ticket No.

## SUBCONTRACTORS

Company

No. Men

1. WCM-8
2. Denver Reel - 3 - 2 HRS
3. MURPHY - 1 - Loader/oper
4. 2 - TANDEM
5. RIVIERA - 1
6. STRESSCON - 4
8. FORM BUILDERS - 3

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) DENVER REEL STARTED TIEING VAULT WALL STEEL. POUR VAULT ON 9/18.
- 2) FORM & POUR TOPPING SLAB @ CORNERS ON 1ST FLOOR TO BE ABLE TO START BRICK WORK.
- 3) 8427448 Case Number (Westminster Police). POLICE STOPPED BY AND SAID ARRESTED 2 PEOPLE ON PICKING UP WCM CONES AND BARRICADES.
- 4) ZIG ZAG DID 4 - 4"X10" CORES @ TIE BEAMS. 9:30-12:00 (WASSNAAR WILL PICK THEM UP. WASSNAAR PICKED UP CYLINDERS @ 12:30.
- 5) MEL GRANTING DOWELS & HOLES IN TIE BEAM FOR STRESSCON.
- 6) NORTHWESTERN DOING BACKFILL FOR O'DONNELL ON STORM EAST SIDE.
- 7) CALLED NORTHSTAR, O'DONNELL, RIVIERA, HELM, HEAT POWER, ON SCHEDULE FOR BLDG TOPPING SLABS START 10/1, ROOF ON BLDG 10-15.
- 8) TOLD TO Dave Reel on nothing along in parking lot. S. Bldg for 9-17.
- 9) SCHEDULED TO POUR LIGHT POLE BASES ON 9-21.
- 10) RIVIERA SET TEMPORARY POWER TO BLDG. 220 3 PHASE.
- 11) WEATHER COLD, LIKE WINTER.
- 12) POUR 2-4'X4'3 ALASTOS @ STRUCTURAL PLAZA.

WCM-015

WHITE - Project Manager

CANARY - Superintendent

**WaltersCM**A Bill L. Walters  
Company

7851 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

**DAILY LOG**PROJECT WESTMINSTER BANKDATE SEPTEMBER 20, 1989

## WEATHER CONDITIONS

SIGNATURE RaymondTemperature: High \_\_\_\_\_ Low \_\_\_\_\_  
Precipitation: Inches \_\_\_\_\_ Rain \_\_\_\_\_ Snow \_\_\_\_\_  
Condition: Clear \_\_\_\_\_ Partly Cloudy \_\_\_\_\_ Overcast \_\_\_\_\_

## SAFETY

Accidents: Personal \_\_\_\_\_ Equipment \_\_\_\_\_ Public Liability \_\_\_\_\_ Property Damage \_\_\_\_\_  
Explain: \_\_\_\_\_

## MATERIALS

Cost Code

Ticket No.

## SUBCONTRACTORS

Company

1 WCM-8  
2 D&D-5  
3 BIRCH-2  
4 STRESSCON-4  
5 HEAT/POWER-2  
6  
7  
8MURPHY- 1 - Hoe/oper No. Men  
1 - Loader/oper  
1 - Dozer/oper

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) D&D DOING CURB & GUTTER & CROSSPANS FROM STATION 6+00 TO 9+00. AHW HAS A BUST PROBLEM IN THE CURB & GUTTER. HAD A BUST TO BE CUT OUT. D&D STARTED @ 8:00 WORKING BACK TO 6+00.
- 2) BURED & DRILLED 7 LIGHT POLE BASES. DRILLED FROM 9:00 TO 10:30. CONCRETE CAME @ 11:00. SCY. ELECTRICIANS SET CONDUIT & BOLT PATTERNS AND AHW SURVEY (GREGG) SITUATED BOLTS SO LIGHTS FACE THE RIGHT WAY.
- 3) MURPHY STILL BEHIND ON MOVING DIRT. BLADE SCHEDULED TO COME IN ON 9-24 MONDAY. BACKFILLED STRUCTURAL PLAZA.
- 4) BIRCH MASONRY SETTING UP SCAFFOLD ON 10 LINE. HAVING PROBLEM WITH THEIR DELIVERY ON THEIR MORTAR COLOR. ~~1~~ 1 DAY BEHIND.
- 5) STRESSCON WAS SUPPOSE TO BE TO 2 LINE ON NORTH SIDE TODAY. WON'T BE UNTIL TOMORROW. THEY ARE 1 DAY BEHIND. 2 DAYS.
- 6) DENVER REEL IS TIEING UP VAULT ROOF STEEL. THEN THEY WILL MOVE OVER TO STRUCTURAL PLAZA.
- 7) TALKED TO HELM (BILL MARTIN) ON SCHEDULE. MICH. CURBS IN 10-1. WILL BE MEETING WITH THEM ON 9-24.
- 8) MET WITH AHW SURVEYING ON \$898 BACKCHARGE. EVERYTHING WORKED OUT ON HANDLING BACKCHARGES. NO BACKCHARGE.

WCM-015

WHITE - Project Manager

CANARY - Superintendent



**WaltersCM** A Bill L. Walters  
Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111 (303) 770-4300

# DAILY LOG

PROJECT WESTMINSTER BANK DATE 10-3-84

WEATHER CONDITIONS  
Temperature: High 75 Low 38 SIGNATURE Reginald  
Precipitation: Inches — Rain — Snow —  
Condition: Clear — Partly Cloudy YES Overcast —

SAFETY  
Accidents: Personal — Equipment — Public Liability — Property Damage —  
Explain: —

MATERIALS		SUBCONTRACTORS	
Cost Code	Ticket No.	Company	No. Men
		1. BETCH-9	MURPHY - 1 - Loader/oper
		2. WCM-11	1 - Blade/oper
		3. O'DONNELL-3	
		5. HEAT/Power-1	D&D-3
		6. STRESSCON-4	HELM-3

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) PUT IN SCUPPER FOR ROOF ON 10 LINE. 2 BRICKS HIGH & 2 BRICKS LONG, 9" OFF OF TWIN TEE IN CENTER OF WALL.
- 2) KEVIN, BARRY, MCL WORKING IN PARKING LOT.
- 3) REST OF CREW GETTING 1ST FLOOR READY FOR A POUR.
- 4) 2 PEOPLE FROM CHASE MANHATTAN BANK VISITED THE JOB SITE. SHOWED THEM AROUND COMMENTED HOW CLEAN JOB WENT.
- 5) D&D SHOULD HAVE CURB & GUTTER IN PHASE 1 PARKING DONE.
- 6) HEAT/POWER HAS 4 GUYS SCHEDULED FOR THURSDAY.
- 7) TALKED TO ART WOOD OF SUBURBAN ON CONCRETE DESIGN FOR FLOOR TAPPINGS. WE ARE GOING TO A 5 1/2 SACK MIX WITH A POZZOLITH ACCELERATOR.
- 8) JOHN WAS OUT THIS MORNING SAYING CHANGES TO BE MADE. NO LONGER WITH WALTERS. DAVE MCCALL PROJECT MANAGER.
- 9) TALKED TO BRANNON ON PAVING. START TODAY & WORK SATURDAY ALSO.
- 10) MAY HAVE TO WORK LATE TO GET READY FOR 1ST FLOOR POUR. NO OVERTIME.
- 11) 3:30 STARTED TO RAIN. CHECK. MAY HAVE TO CANCEL PAVING.

PARKING LOT & 1ST FLOOR POUR.  
WCM-015 WHITE - Project Manager CANARY - Superintendent

**WaltersCM**A Bill L. Walters  
Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

**DAILY LOG**PROJECT Westminster Bank DATE OCTOBER 8, 1984

## WEATHER CONDITIONS

Temperature: High 65 Low 33  
Precipitation: Inches — Rain — Snow —  
Condition: Clear — Partly Cloudy Yes Overcast —SIGNATURE Bogdan

## SAFETY

Accidents: Personal — Equipment — Public Liability — Property Damage —  
Explain: —

## MATERIALS

Cost Code

Ticket No.

## SUBCONTRACTORS

Company

No. Men


1. WCM-11  
 2. O'DONNELL-2  
 3. RIVIERA-2  
 4. DID-22  
 5. BENCH-10  
 6. STRESSCON-4

MURPHY-0  
 HEAT/POWER-2  
 ANDERSON-2

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) SET UP FOR 1ST FLOOR POUR. PUMPER HERE @ 6:00.  
READY TO POUR. SUBURBAN HAD PROBLEMS WITH THE BATCH PLANT. CONCRETE DIDN'T SHOW UP UNTIL 8:15. SLUMP WAS BAD & CONCRETE TEMPERATURE WAS 65°. BACKCHARGE SUBURBAN. I TALKED TO MIKE.
- 2) FINISHED PUMPING @ 11:30. POURED 1ST FLOOR & STAIR TOWER & 2 LANDINGS. 132 CY.
- 3) PUSHED BRANIFF BACK UNTIL WEDNESDAY. SUBGRADE STILL TO WET.
- 4) PUBLIC SERVICE SHOWED UP TO HOOK UP PERMANENT POWER THROUGH PARKING LOT.
- 5) PRECAST FINISHED UP- ON THE BUILDING. THEY SHOULD BE COMPLETELY DONE ON WEDNESDAY.
- 6) DID POUR A ALL CURB & ENTRY FOR PHASE 1 PARKING. 8 CY

WCM-015

WHITE - Project Manager

CANARY - Superintendent



**WaltersCM** A Bill L. Walters  
Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

### DAILY LOG

PROJECT Waterbury Bank DATE October 23, 1984

**WEATHER CONDITIONS**

Temperature: High 90° Low 25°

Precipitation: Inches \_\_\_\_\_ Rain \_\_\_\_\_ Snow \_\_\_\_\_

Condition: Clear \_\_\_\_\_ Partly Cloudy YES Overcast \_\_\_\_\_

SIGNATURE Don 10/24/84

**SAFETY**

Accidents: Personal \_\_\_\_\_ Equipment \_\_\_\_\_ Public Liability \_\_\_\_\_ Property Damage \_\_\_\_\_

Explain: \_\_\_\_\_

**MATERIALS**

Cost Code

Ticket No.

**SUBCONTRACTORS**

Company

No. Men

1. WCM - 4
2. HELM - 1
3. RIVIERA - 1
5. O'DONNELL - 2
6. BERKH - 4 HALF/DAY
7. \_\_\_\_\_
8. \_\_\_\_\_

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) Weather wasn't bad. I was worried day.
- 2) CARPENTERS CONTINUE WEATHER ENCLOSURES
- 3) BERKH WORKED HALF A DAY MOVING SCAFFOLD. THE GROUND IS TOO WET YET.
- 4) STILL HAVEN'T DONE ANY SITE WORK.
- 5) KEVIN GRANTED THE ROOF PESTS.

WCM-015

WHITE - Project Manager

CANARY - Superintendent

**WaltersCM**A Bill L. Walters  
Company

7951 East Maplewood Avenue, Suite 200, Englewood, Colorado 80111, (303) 770-4300

**DAILY LOG**PROJECT Westminster Board DATE October 29, 1984

## WEATHER CONDITIONS

Temperature: High 60 Low 35  
Precipitation: Inches 0 Rain 0 Snow 0  
Condition: Clear 0 Partly Cloudy 0 Overcast 0SIGNATURE Raymond

## SAFETY

Accidents: Personal 0 Equipment 0 Public Liability 0 Property Damage 0  
Explain: 0

## MATERIALS

Cost Code

Ticket No.

## SUBCONTRACTORS

Company

No. Men

1. WCM - 7	D & D - 20
2. O'DONNELL - 3	Heat/Pump - 1
3. RIVIERA - 2	BRUNDAGE - 1
4. HELM - 4	AHW - 2 Half Day
5. BERICH - 7	MORTSTAR - 2
6. CBC - 6	

EQUIPMENT RENTAL	DATE IN	DATE OUT	SUPPLIER	REMARKS

- 1) O'DONNELL TAPPED ROOF DRAINS INTO STORM ON EAST SIDE OF BLDG.
- 2) HELM FINISHING DIRT DROPPETS ON THE ROOF.
- 3) RIVIERA DOING ROUGH INS ON FLOORS.
- 4) MORTSTAR UP ON 3RD FLOOR & 1ST FLOOR ON ROUGH INS.
- 5) BERICH ON WEST SIDE OF THE BUILDING AND ON THE COLUMNS ON THE SOUTH SIDE.
- 6) D & D PAUSED ALL OF 2ND FLOOR, LAST SECTION OF 3RD FLOOR, SOUTH CANOPY DRIVE, STAIR TOWER, 1 LANDING, ELEVATOR PIT FLOOR.
- 7) TENTAL PUMPING @ 7:00, FINISHED @ 1:30. PAID 176.57 TOTAL FOR DAY.
- 8) KEVIN WAS SICK TODAY.
- 9) AHW SCHEDULED PARKING LOT & THE ROOF.
- 10) CBC FINISHED 2/3 OF ROOF.
- 11) CALLED MORTSTAR ON RETURN CREDIT FOR FULL \*100 LB. GYPSUM CRATES.
- 12) CALLED TO DENNIS HEATER ON PICKING UP RENTAL ITEMS.

WCM-015

WHITE - Project Manager

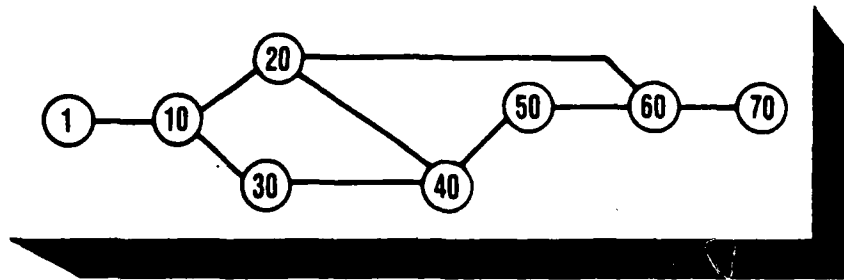
CANARY - Superintendent

**APPENDIX C**  
**PROJECT MANAGEMENT SOFTWARE UTILIZED**



# PMS-II

THE MOST COMPLETE  
PROJECT MANAGEMENT  
SYSTEM . . .



NORTH AMERICA MICA, INC.

**MICA**

11772 Sorrento Valley Rd., Suite 100 • San Diego, CA 92121 • (619) 481-6998/Telex #701257 NAMICA UD

# **PMS-II — A Mainframe Critical Path Project Management System on a Microcomputer**

## **THE PROBLEM:**

What do you do when . . . ?

The president of your company just assigned you the responsibility of managing the development of a new product that requires:

- Market verification
- Design feasibility
- Reliability certification
- Production facility design
- Pilot production run
- Conceptual design
- Prototype development
- Test marketing
- Facility construction

And you are expected to present a plan from beginning to end at the Board of Directors meeting in two weeks. Your plan must identify what resources will be needed and when, how much the project will cost, and when each of the major accomplishments will be ready for review. You are to use the available resources that are controlled by ten different department managers, and this project is to be scheduled around the current workload of the various departments. And, by the way, your bonus and next year's salary are dependent upon how quickly and inexpensively you can accomplish this assignment.

How are you going to approach this seemingly impossible task?

## **THE SOLUTION:**

You need a systematic method for assembling your project into a dynamic network of interrelated activities. This network should be able to handle the complexities of your project, yet be simple to change. It should be able to present you with the current status of each activity in your project, and it should be able to tell you how each is doing against budget.

This systematic method should enable you to prepare the reports that the president wants, and it should allow you to identify what activities will be affected by a slip or a gain in another activity. Your project needs to be under the control of a Project Management System.

## Maximum project control on a micro budget! Check these features . . .

PMS-II is a complete critical path network analyzer that will calculate the early start/finish and late start/finish dates, float time, and critical paths for project networks with up to 2700 activities.

You'll find PMS-II as easy to operate as it is profitable to use. The 100+ page user manual comes complete with a tutorial section to guide the first time user through the operation of the system. In just a few minutes you can have PMS-II solving your project problems.

### FEATURES:

- U.S. and international date formats supported.
- Schedule based on a 3, 4, 5, 6, or 7 day work week.
- Scheduling around up to 100 holiday or non-work periods of up to 99 days in length.
- Three project management disciplines: 1) **actual start/finish**, 2) **days remaining**, and 3) **percent complete**. Since PMS-II maintains the data required for all three methods, you can switch from one mode to the other on the same project as conditions dictate.
- Optional **desired finish date** causes PMS-II also to process your project from desired finish to earliest start calculating "True Float" for all activities.
- All mandatory and optional **government contract reporting requirements** as defined in the Corps of Engineers Project Management specifications ER-1-1-11 and DOD 7000-2, a real plus for those engaged in **government contract work**!
- Designed by experts in the field of **user oriented software**, PMS-II is extremely easy to operate. It is a 'menu-driven' system with extensive editing and error checking features. PMS-II's calculation program even **checks your network** for logic errors and identifies broken activity chains.
- **Speed** — performing all calculations on a project network of 1000 activities in under 10 minutes. This **rapid turn-around time** affords you the luxury of playing out various 'what if' scenarios until all dates and durations are fully optimized.
- Easily interfaced to your **job cost system** or **dBASE II (tm)** and other programming languages.

### SUPPORT:

North America Mica provides each user with one year of free software and manual updates (PMS-II is now in its eighth enhanced release) as well as free phone-in consulting service on any PMS-II related question.

### CAPACITY:

PMS-II determines the maximum number of activities per network by looking at the amount of free memory available. With 64K under the CP/M operating system, PMS-II will handle over **1250** activities. Under MP/M in a 48K user partition, PMS-II will allow about **700** activities, and under CP/M-86 or PC/MS DOS up to **2700** activities can be processed in 128K, with a hard disk or XT system.

PMS-II will manage 'n' number of projects or sub-projects depending on disk capacity. Sub-projects can be automatically linked to provide for an **unlimited project size**.

### HARDWARE REQUIREMENTS:

- Any microcomputer system with at least 64K of memory, and
- 80 character by 24 line video display with addressable cursor, and erase to end-of-line, and
- A 132 column printer; character or dot-matrix (10 CPI on 14" paper, 16.7 CPI with 8" paper), and
- 600K of disk storage in 2 drives or a hard disk.

### SOFTWARE REQUIREMENTS:

- CP/M (tm) (Ver. 2.2 or later), MP/M (tm), CP/M-86 (tm), MSDOS (tm), or PC DOS (tm) operating systems.

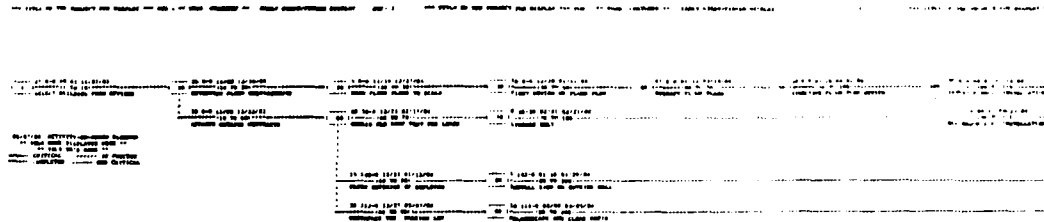
dBASE II IS A TRADEMARK OF ASHTON-TATE. CP/M & MP/M ARE TRADEMARKS OF DIGITAL RESEARCH.

## Turn Projects Into Profits . . .

# With The Most Complete Set of Project

## ACTIVITY-ON-ARC DIAGRAM —

- A graphic presentation of the logic of the activity network.
- Displays node numbers, description, and duration of each activity.
- Optionally prints the early start/finish or late start/finish dates.
- Highlights the Critical Path(s), In-Process, and completed activities.



## ACTIVITY REPORT — keystone of the system's reporting capabilities:

- Allows you to select primary, secondary, and/or tertiary sort from early start, early finish, late start, late finish, responsibility, aux1, aux2, float, job cost fields, or end node.
- You can select a range of values or a single value on any or all of the data fields to extract any subset of activities from your project.
- The report provides page breaks and cost subtotal on the major sort field at your option.
- You can optionally suppress the printing of the budgeted and actual dollar amounts.
- The activity status as of the report date (Can Start, Must Start, Late, Critical, Active, Complete, or Planned) is displayed for each activity.
- All of your planning parameters (i.e., burden rate, workdays per week, etc.), holidays, and sort/select choices are recapped at the end of the report.
- A 'Schedule Only' Report can be displayed on the screen.

ACTIVITY REPORT FOR TITLE OF THE PROJECT FOR DISPLAY ***									
** YOUR NAME DISPLAYED HERE **									
NO	NAME	UNIT	EST	ACT	PLN	ACT	PLN	ACT	PLN
1	10	10	1000	1000	1000	1000	1000	1000	1000
2	20	20	2000	2000	2000	2000	2000	2000	2000
3	30	30	3000	3000	3000	3000	3000	3000	3000
4	40	40	4000	4000	4000	4000	4000	4000	4000
5	50	50	5000	5000	5000	5000	5000	5000	5000
6	60	60	6000	6000	6000	6000	6000	6000	6000
7	70	70	7000	7000	7000	7000	7000	7000	7000
8	80	80	8000	8000	8000	8000	8000	8000	8000
9	90	90	9000	9000	9000	9000	9000	9000	9000
10	100	100	10000	10000	10000	10000	10000	10000	10000

Reproduced from  
best available copy.

[illegible]

- Shows in **graphic form** the start and stop date, float time, and percent complete status for each activity.
- Shows the **critical path(s)**.
- Gives you the same data **sorting and selection** options as the Activity Report.
- Allows you to **define the symbols** you want for Critical Path, Activity Time, Float Time, Late, and Percent Complete.
- Prints a **vertical acros line** under the report date which shows you what should be complete and what is still ahead.
- The holidays, non-work periods, and weekends are **highlighted**.
- You can select either a **daily or weekly** print format (weekly shown).

[illegible]

# Earned Value Analysis

- For defense contractors working to DOD reg 7000.2.
- Shows value of work budget vs. accomplished vs. actual cost for each activity.
- Calculates earned value based upon percent complete or days remaining.
- An outstanding management tool that is applicable to any project control situation.
- Report generated in three sections:

02/07/84

ACTIVITY EARNED VALUE ANALYSIS

PAGE 1

\*\*\* TITLE OF THE PROJECT FOR DISPLAY \*\*\*

\*\* YOUR NAME DISPLAYED HERE \*\*

EARLY START--EARLY FINISH ON MATERIAL LABOR BUDGET

SN	EM	DESCRIPTION	BCWS	BC	BCWP	ACWP	START	FINISH
1	20	SELECT BUILDING FROM OPTIONS	20,861	100%	20,861	9,662	10/03/83	11/07/83
10	20	DETERMINE FLOOR REQUIREMENTS	15,232	100%	15,232	15,232	11/08/83	12/16/83
10	60	ADVERTISE OUTSIDE CONTRACTS	21,159	100%	21,159	11,240	11/08/83	12/22/83
20	30	DRAW FLOOR PLANS TO SCALE	1,621	100%	1,621	3,621	12/18/83	12/27/83
30	40	FIRST REVIEW OF FLOOR PLAN	23,240	0%	0	0		
40	50	REMARK FLOOR PLANS	16,549	0%	0	0		
60	70	REPAIR OLD ROOF TEST FOR LEAKS	36,549	0%	0	0		
60	80	PAINT EXTERIOR OF BUILDING	17,685	0%	0	0		
60	90	RESURFACE THE PARKING LOT	17,685	38%	5,141	8,785	12/27/83	
60	90	INSTALL SIGN ON OUTSIDE WALL	2,229	0%	0	0		
			130,290		56,714	48,548		
		LESS PROGRESS BILLINGS TO DATE			0	0		
					56,714	48,548		

SCHEDULE VARIANCE = -182,576

COST VARIANCE = 8,176

## 1. Value of work accomplished by activity as a function of budgeted amounts, percent complete, and actual.

02/07/84

EARNED VALUE OF ACTIVITIES BY MONTH

PAGE 2

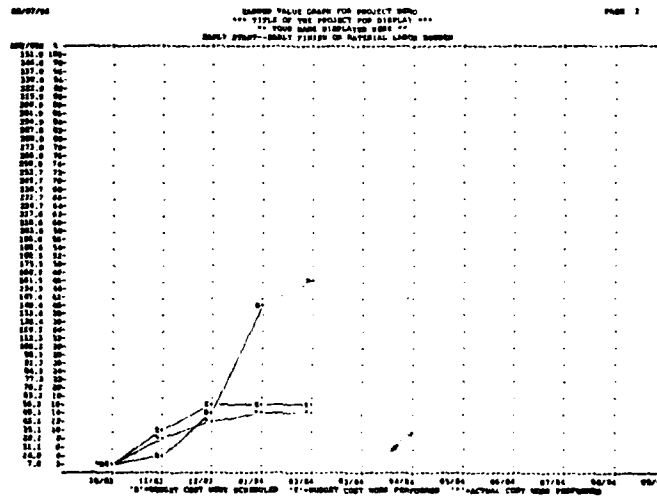
\*\*\* TITLE OF THE PROJECT FOR DISPLAY \*\*\*

\*\* YOUR NAME DISPLAYED HERE \*\*

EARLY START--EARLY FINISH ON MATERIAL LABOR BUDGET

MONTH	AMOUNT	BCWS	ACWP	BCWP	ACWP	BCWS	ACWP	BCWP	ACWP
10/83	2,461	2,461	0.70	8,749	8,749	2,461	2,461	2,461	2,461
11/83	11,793	14,254	4.06	22,214	20,993	9.02	16,607	24,350	6.95
12/83	38,657	66,921	12.79	31,117	32,082	14.84	16,197	40,777	11.62
01/84	92,230	127,161	35.07	53,778	55,001	15.93	6,133	47,110	13.62
02/84	22,129	150,290	49.38	653	56,714	16.10	1,434	48,548	13.83

## 2. Budgeted, earned, and actual amount by month for all activities.



## 3. A graphic presentation of the earned value, the budget, and the actual amounts.

# Funding Schedule

- Shows in tabular and graphic form the total costs by month in 4 ways: 1) early finish basis, 2) late finish basis, 3) average of 1 and 2 (per Corps of Engineers specification ER 1-1-11 reporting requirements), and 4) actual cost at actual start/finish.
- For activities that span more than one month, PMS-II can put all the activity's dollars in the ending month or spread them over the duration of the activity.

02/07/84

VALUE/COST OF ACTIVITIES BY MONTH  
 \*\*\* TITLE OF THE PROJECT FOR DISPLAY \*\*\*  
 \*\* YOUR NAME DISPLAYED HERE \*\*  
 ALLOCATION METHOD = SPREAD ON MATERIAL LABOR BURDEN

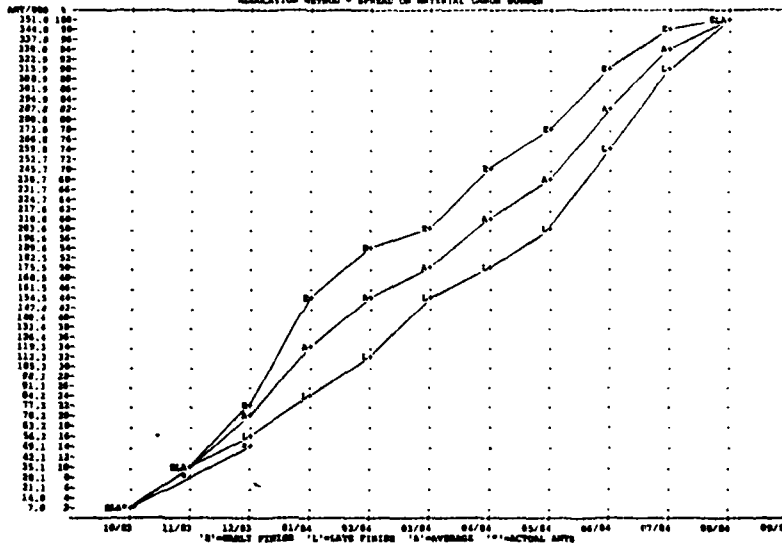
PAGE 1

MONTH	EARLY FINISH			LATE FINISH			AVERAGE			ACTUAL		
	AMOUNT	ACCUM	TOTAL	AMOUNT	ACCUM	TOTAL	AMOUNT	ACCUM	TOTAL	AMOUNT	ACCUM	TOTAL
10/83	8749	8749	2.49	8749	8749	2.49	8749	8749	2.49	7783	7783	2.22
11/83	22216	30965	8.82	22216	30965	8.82	22216	30965	8.82	16607	24390	6.95
12/83	43444	74409	21.20	26732	57697	16.44	35088	66053	18.82	24150	48540	13.83
01/84	76136	150545	42.89	25214	82911	23.62	50674	116727	33.25	0	48540	13.83
02/84	36444	186990	53.27	30267	113278	32.27	33406	150133	42.77	0	48540	13.83
03/84	14666	201657	57.45	38363	151640	43.20	26514	176647	50.32	0	48540	13.83
04/84	39082	240739	68.58	19785	171425	48.84	29433	206080	58.71	0	48540	13.83
05/84	31205	271944	77.47	32275	203700	58.03	31739	237819	67.75	0	48540	13.83
06/84	45391	317335	90.40	54505	258205	73.56	49948	287767	81.98	0	48540	13.83
07/84	25597	342932	97.69	58988	317192	90.36	42292	330059	94.03	0	48540	13.83
08/84	7301	350233	99.77	32603	349796	99.45	19952	350011	99.71	0	48540	13.83

02/07/84

\*\*\* TITLE OF THE PROJECT FOR DISPLAY \*\*\*  
 FUNDING SCHEDULE GRAPH FOR PROJECT DEMO  
 \*\* YOUR NAME DISPLAYED HERE \*\*  
 ALLOCATION METHOD = SPREAD ON MATERIAL LABOR BURDEN

PAGE 2



Now, Do You Have the Resources to Accomplish the Schedule . . . ?

## **RMS-II**

### **A Resource Management System For Use With PMS-II**

#### **THE PROBLEM:**

Your company has successfully used PMS-II to schedule and control many concurrent projects, but your project managers are experiencing unexpected delays and confusion because more than one of them has planned to utilize the same resource at the same time.

Often, critical activities within your project are discussed in detail with the department managers that will be providing the resource(s) required. They may assure you that your project will be "taken care of" only to find out when it is too late that they don't have enough resources to meet the schedule because the resource plans that were submitted for budget approval were in error! They're very sorry, but your project will now be delayed. All remaining activities will need to be renegotiated with all of the other departments and you can expect more of the unexpected.

#### **THE SOLUTION:**

Your company needs to use a systematic method for controlling the allocation of finite resources against the requirements of many competing projects. Your company needs RMS-II, the Resource Management System for PMS-II.

### **Put An End To Resource Conflicts . . .**

RMS-II is a completely integrated resource management system that allows a project manager to define up to 96 separate resource centers — people, departments, machine tools, test centers, etc. — each with a unique capacity in hours, an hourly cost, and a burden rate. These resources can then be allocated to the activities in your PMS-II projects. Reports can be generated showing these allocations on either a project or a resource center basis.

RMS-II is ideal for contractors who have their own crews, for engineering or manufacturing firms using a matrix type of organization, or in any project situation where conflicts over scarce resources can arise. It makes capacity planning and load leveling easy by providing the resource managers with quick visibility of the demands on the resource centers under their control. RMS-II provides:

- Optional selection of either the resource center's burden rate or the burden rate associated with the project (fixed burden contracts).
- Video display of all allocations against a resource center that potentially conflict with the activity that is being allocated.
- Allocations automatically update the activity's budget for labor and burden.
- Allocations are made in hours per day and can be budgeted in either total hours or total dollars.

### **. . . And Unproductive Excess Resource Capacity**



# Allocation Report For A Project

RESOURCE ACTIVITY REPORT - *** TITLE OF THE PROJECT FOR DISPLAY ***										PAGE 1
** YOUR NAME DISPLAYED HERE **										
DATE	TIME	DAY	ACT	STATUS	FINISH	MATERIAL	LABOR	NUMBER	STATUS	
30	00	10	04	DEPT - OPT	FIRST REVISED OF FLOOR PLAN				ACTIVE AND CRITICAL	
				AUT-1-1	EARLY - 12/28/83	01/11/84	200	15000	0100	PLR
				AUT-1-2	LATE - 12/28/83	01/11/84	0	0	0	ACT
				JOBCH- A104	ACTUAL - 12/28/83	01/11/84	200	15000	0100	YAR
					TOTAL/FREE FLIGHT - 0 / 0					
				NO DESCRIPTION	FROM TO	DEPT	NO	LABOR	NO	
				OR 1	ELECTRICAL DEGRAD (12/28/83)	01/11/84	30	10	7500	0050
				OR 2	MECHANICAL DEGRAD (12/28/83)	01/11/84	30	10	7500	0050
00	50	41	04	DEPT - EDC	SECONDARY FLOOR PLANS				NOT START AND CRITICAL	
				AUT-1-1	EARLY - 01/11/84	02/15/84	1120	17036	9340	PLR
				AUT-1-2	LATE - 01/11/84	02/15/84	0	0	0	ACT
				JOBCH- A105	ACTUAL - 01/11/84	02/15/84	1120	17036	9340	YAR
					TOTAL/FREE FLIGHT - 0 / 0					
00	70	00	04	DEPT - PE	REPAIR OLD BODY TEST FOR LEAKS				NOT START	
				AUT-1-1	EARLY - 12/23/83	02/17/84	000	30000	10200	PLR
				AUT-1-2	LATE - 02/04/84	04/02/84	0	0	0	ACT
				JOBCH- A107	ACTUAL - 12/23/83	02/17/84	000	30000	10200	YAR
					TOTAL/FREE FLIGHT - 0 / 0					
				NO DESCRIPTION	FROM TO	DEPT	NO	LABOR	NO	
				OR 1	ELECTRICAL DEGRAD (12/23/83)	02/17/84	10	60	10000	5000
				OR 2	MECHANICAL DEGRAD (12/23/83)	02/17/84	20	60	20000	10000
00	00	10	04	DEPT - PE	EMPTY SECTION OF BUILDING				POSSIBLE	
				AUT-1-1	EARLY - 12/23/83	02/17/84	360	11250	6075	PLR
				AUT-1-2	LATE - 07/16/84	08/03/84	0	0	0	ACT
				JOBCH- A108	ACTUAL - 12/23/83	02/17/84	360	11250	6075	YAR
					TOTAL/FREE FLIGHT - 142 / 0					
				NO DESCRIPTION	FROM TO	DEPT	NO	LABOR	NO	
				OR 1	ELECTRICAL DEGRAD (12/23/83)	02/17/84	20	15	7500	0050
				OR 2	MECHANICAL DEGRAD (12/23/83)	02/17/84	10	15	3750	0025
00	00	30	04	DEPT - PE	REPAIR TWO PARKING LOT				ACTIVE	
				AUT-1-1	EARLY - 12/27/83	02/07/84	720	10076	5037	PLR
				AUT-1-2	LATE - 06/09/84	07/17/84	240	5038	2507	ACT
				JOBCH- A109	ACTUAL - 12/27/83	02/07/84	240	5038	2507	YAR
					TOTAL/FREE FLIGHT - 112 / 0					
00	00	5	04	DEPT - PE	INSTALL SIGN ON OPPOSITE WALL				POSSIBLE	
				AUT-1-1	EARLY - 01/16/84	01/20/84	120	1361	740	PLR
				AUT-1-2	LATE - 05/06/84	05/19/84	0	0	0	ACT
				JOBCH- A110	ACTUAL - 01/16/84	01/20/84	120	1361	740	YAR
					TOTAL/FREE FLIGHT - 142 / 0					
				FINAL TOTAL			3570	95221	46361	
							360	5410	2507	
							3160	80001	41370	

```

*** TITLE OF THE PROJECT FOR DISPLAY ***

CALCULATIONS BASED ON USUAL ACTUAL START/FINISH DATE PROJECTS

TOTAL ACTUAL COST = 0105
TOTAL PAYMENTS = 0
OVER / UNDER = -0105

START/END DATE : 10/01/83
CUSTOMER : ** YOUR PROJECT NAME **
DATE FOR MEAS : 1
JOB PARAMETERS : / /

PROJECT MEAS : ** YOUR PROJECT NAME **
LAST PAYMENT DATE :
SCHEDULE : 1 10

SELECTION PARAMETERS
**
122383 ENDJOB
020184

3 - EARLY START

HOLIDAYS CRITIC
STARTS
10/10/83 2 COLUMBUS DAY
11/24/83 2 THANKSGIVING
12/25/83 1 CHRISTMAS
01/02/84 1 NEW YEAR DAY
02/28/84 1 PRES. LINCOLN BIRTH
05/28/84 1 EMERGENCY DAY
07/04/84 1 JULY 4TH

```

02/07/84 RESOURCE UTILIZATION SUMMARY									
FOR PROJECT 1000000									
NO	DESCRIPTION	EARLYEST	LATEST	W-A-L-E	TOT. NO	LABOR	DEPT		
1	ELECTRICAL DEGRAD	12/23/83	02/17/84	2	1000	21000	15000		
2	MECHANICAL DEGRAD	12/23/83	02/17/84	2	1700	31250	16875		
						42250	31875		

## ALLOCATION REPORT —

- Shows all allocations to a given activity within a project from any resource center.
- Indicates whether each allocation to an activity is within that activity's current scheduled time period.
- Offers all the Sort and Select features from PMS-II Activity Report.

NORTH AMERICA MICA, INC.



# Resource Allocation Report/Graph

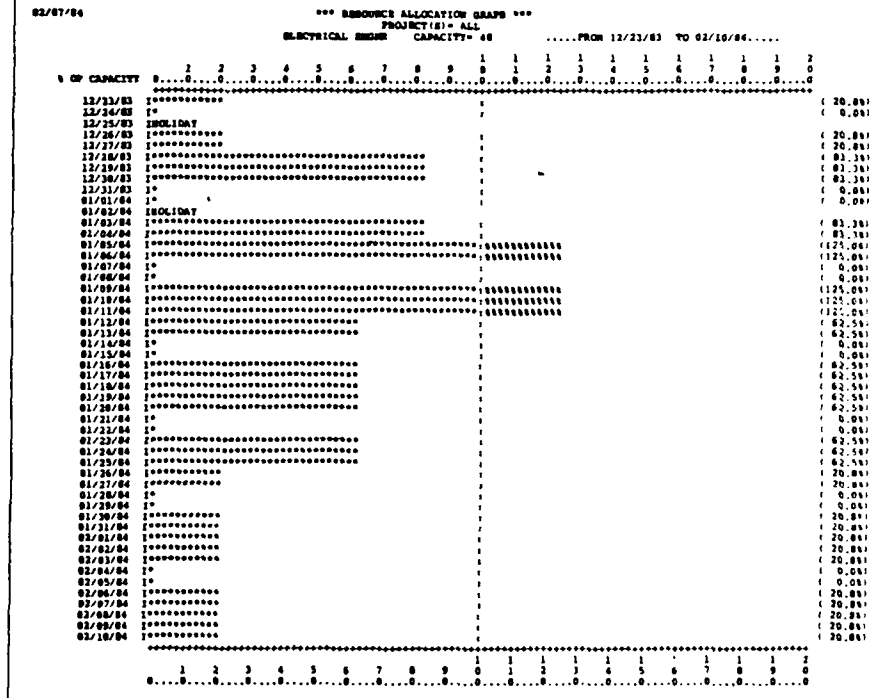
02/87/84 \*\*\* RESOURCE ALLOCATION REPORT \*\*\* PAGE 1

1 ELECTRICAL ENGINE CAPACITY= 48 25.00 PER HOUR BOMBER-1054

.....FROM 12/23/83 TO 02/10/84.....

PROJECT	RES/HR	SHORE	SHORE	HR/DAY	SCAP	D-DAYS	TOTVAL	FROM	TO	LABOR	BURDEN
DEMO	5	60	70	10	21	40	400	12/23/83	02/17/84	10,000	5,400
DEMO	5	30	40	10	43	10	100	12/20/83	01/11/84	7,500	4,050
DEMO	5	60	80	20	42	15	300	01/05/84	01/25/84	7,500	4,050
							1000			25,000	13,500

END OF RESOURCE ALLOCATION REPORT -- PROJECT(S)= ALL



- Shows sum of all allocations of a given resource center as a percent of capacity over time.
- Graph shows allocations by date and highlights allocations in excess of 100% of capacity.
- Date selectable and single project selectable for partial print.

NORTH AMERICA MICA INC

Reproduced from  
best available copy.

ND-A164 818

THE BANK OF WESTMINSTER AND HYLAND PARK CONSTRUCTION  
CONTRACTS AS ENGINEER. (U) COLORADO UNIV AT BOULDER DEPT  
OF CIVIL ENVIRONMENTAL AND ARCH. R J BOSSA 13 DEC 84  
N66314-70-A-0062 F/G 3/1

2/2

**UNCLASSIFIED**

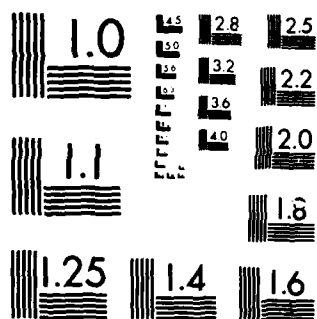
**F/G 5/1**

NL

END

FILMED

0711



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

**And you can manage your project's material commitments as well . . .**

```

02/07/04          *** CONSOLIDATED ALLOCATION REPORT ***          PAGE 1
2 MECHANICAL  BUREAU CAPACITY= 54          25.00 PER HOUR          BUREAU=10%

.....FROM 12/23/02 TO 02/10/04.....

PROJECT  EMP#   EMPID  EMPNO  HRS/DAY  SCAP  H-WAYS  TWTOTL  FROM      TO      LABOR      BUREAU
-----
BEND      5      66   76   30   27   00     800  12/23/02  02/17/04   20,000   10,000
BEND      9      68   78   30   26   00     750  12/23/02  01/11/04    7,500   4,000
BEND      3      68   00   10   19   15     150  01/05/04  01/25/04    3,750   2,025
-----
                                1250                                31,250   16,025

END OF RESOURCE ALLOCATION REPORT

```

[illegible]

- 11

# MMS-II

## THE PROBLEM:

### MEMO

To: PROJECT MANAGER

re: GM TOWER

- Will the materials arrive in time for each activity?
- Can money be saved by bulk purchases across projects?
- The project schedule has changed — what orders need attention?
- What are the details of the large material expenditures for the main steel structure?
- Will material orders allow concrete pouring to be moved back two weeks?
- The vendor is asking for payment — did we receive line 12 of P.O. 142-3434A?
- What materials have been allocated for the major electrical work?
- I'd like to see details of how you are minimizing construction loan cash draw.

Call me tomorrow morning.  
From: A.J.T., Vice President

P.S.: "Genius is not 'knowing' the answer to every question. It is knowing 'where to find' the answer." (Albert Einstein)

## THE SOLUTION:

MMS-II is a materials management system that gives a project manager control of all major bid items. As many as 1000 purchase orders can be entered into MMS-II's purchase order data base for as many as 500 different vendors. Up to 32,000 line items of material can be allocated to 'n' activities in 'n' PMS-II projects.

MMS-II works hand-in-hand with PMS-II. Entries to MMS-II automatically update material budget and actual values in PMS-II and are shown on the ACTIVITY REPORT, FUNDING SCHEDULE, and EARNED VALUE ANALYSIS. Schedule changes in PMS-II are matched with scheduled delivery dates of material orders, and late or excessively early scheduled deliveries are highlighted.

MMS-II has the same easy-to-use techniques for entering and updating information as PMS-II. Only necessary information is requested, and clear editing and error checking messages help you get your data entered correctly the first time.

02/07/84 ACTIVITY REPORT WITH MATERIAL ALLOCATIONS FOR BEND 1 *** MOVE TO A NEW BUILDING *** PAGE 1									
SHED	LINE	QTY	UNIT	START	FINISH	MATERIAL	LABOR	SUBMIT	STATUS
1	10	30	1000	DEP = ENE	SELECT BUILDING FROM OPTIONS				ACTIVE AND CRITICAL
				ADM-1 = 1	EARLY = 10/01/83 11/07/83	300	6963	7796 PLN	
				ADM-2 = 1	LATE = 10/01/83 11/07/83	324	8000	1000 ACT	
				JOBCH = A100	ACTUAL = 10/01/83 11/07/83	-24	6163	6796 VAB	
					TOTAL/FREE FLOAT = 0 / 0				
VENDOR P. O. # LINE ITEM DESCRIPTION UN DATE QTY COST DATE RECEIVED QTY COST									
33	1203		1 E-2001	E SIZE GRAPH PAPER	PL 09/22/83	2	60	09/30/83	2 60 CLOSED
33	1203		2 PS-123	DRAFT PEN SET+PALL	EA 09/22/83	1	30	09/30/83	1 30 CLOSED
12	134-001021		34 PRINTS	BLUE PRINTS AS SPEC	EA 09/22/83	16	24	10/01/83	16 48 CLOSED
103	2712		7 SERVICES	DRAFTING	HR 09/22/83	7	100	10/01/83	7 100 CLOSED
						300			324
60	00	30	304	DEP = PL	RESURFACE THE PARKING LOT				CRITICAL
				ADM-1 = 1	EARLY = 12/27/83 03/07/84	5296	400	210 PLN	
				ADM-2 = 1	LATE = 06/05/84 07/17/84	0	0	0 ACT	
				JOBCH = A100	ACTUAL = 12/27/83				
					TOTAL/FREE FLOAT = 112 / 0				
VENDOR P. O. # LINE ITEM DESCRIPTION UN DATE QTY COST DATE RECEIVED QTY COST									
33	1204		2 ASPH-001	PROPR/APPLD ASPHALT	YD 01/17/84	30	3400		PAST DUE 31 DAY(S)
33	1204		4 PRINT-10	YELLOW/BLACK MARKING	QL 02/08/84	12	90		ARRIVING 11 2 DAY(S)
33	1202		10 SERVICES	APPLY ASPHALT SURFCE	EA 01/17/84	1	1200		PAST DUE 31 DAY(S)
33	1202		10 SERVICES	PAINT PARKING LINES	EA 02/08/84	1	400		ARRIVING 11 2 DAY(S)
						5296			0

## ACTIVITY REPORT WITH MATERIAL ALLOCATIONS —

- Provides the details of all material allocations for each activity, showing delivery schedule and status.
- Highlights situations where materials are due to arrive outside of currently scheduled activity time periods.
- Keeps track of thousands of line items of material orders as the project moves from activity to activity, making timely delivery of critical materials practical even with frequent schedule changes.
- Highlights areas where delaying or expediting deliveries could improve project profitability and progress.
- Includes the same sort and select capabilities as PMS-II and RMS-II.

# A Materials Management System for use with PMS-II

05/07/04 MATERIAL ORDERS PAGE 1									
P.O. #	LINE	PROJECT	ORDER	ITEM	DESCRIPTION	DATE	QTY	COST	STATUS
1303									
05/01/03									
	1	DEMO	1	10 0-2401	E SIZE GRAPH PAPER	PE 05/23/03	2	60	05/26/03 2 60 CLOSED
	2	DEMO	1	10 05-123	DRAFT PEN SET-FULL	EA 05/23/03	1	36	05/26/03 1 36 CLOSED
1204									
05/23/03									
	1	DEMO	60	00 ASPH-001	PREP/APPLY ASPHALT	TD 01/17/04	30	3600	
	4	DEMO	60	00 PAINT-55	YELLOW/ROAD MARKING	EA 02/09/04	12	36	
125A-001021									
05/01/03									
	1A	DEMO	1	10 PRINTS	BLUE PRINTS AS SPEC	EA 05/23/03	16	24	10/01/03 16 48 CLOSED
1302									
05/23/03									
	12	DEMO	60	00 SERVICES APPLY	ASPHALT SURF	EA 01/17/04	1	1200	
	13	DEMO	60	00 SERVICES PAINT	PARKING LINES	EA 02/09/04	1	600	
1303									
10/01/03									
	1A	DEMO	100	100 CONDUIT-02	C32 CONDUIT	PT 02/26/04	440	940	
	1B	DEMO	100	100 CONDUIT-12	C36 FIREHALL CONDUIT	PT 02/26/04	80	120	
	1C	DEMO	100	100 PLUS-010	PLUS FLOOR RECEPT	EA 02/26/04	30	240	
	1D	DEMO	100	100 WIRE-012	120V FLEX POWER CBL	EA 02/26/04	4	400	
	1E	DEMO	100	100 PLUS-010	RECEPT MOUNTING BASE	EA 02/26/04	30	76	
	1F	DEMO	100	100 FIT-006	4-1/2" ELEC. TRAY	EA 02/26/04	12	260	
	1G	DEMO	100	100 SERVICES ELEC	TRAIL INSTALLTN	HA 02/26/04	100	4200	

## MATERIAL ORDERS DETAIL REPORT —

- Shows the detail of each purchase order in the data base. Including quantities received against orders.
- P.O.s can be selectively reported based on a range of P.O. numbers, status of purchase order, order date, and vendor.

10/03/00 MATERIALS RECEIVED - AUDIT AND CONTROL PAGE 01									
P.O. #	LINE	VENDOR	ITEM	DESCRIPTION	DATE	QTY	COST	DATE	QTY
1303	1	33	0-2401	E SIZE GRAPH PAPER	PE 05/23/03	2	60	05/26/03	2
1303	2	33	05-123	DRAFT PEN SET-FULL	EA 05/23/03	1	36	05/26/03	1
130A-001021	1A	12	PRINTS	BLUE PRINTS AS SPEC	EA 05/23/03	16	24	10/01/03	16
2712	7	12	SERVICES	DRAFTING	HA 05/23/03	1	100	10/01/03	1

## MATERIALS RECEIVED — AUDIT AND CONTROL —

- Provides for a continuous audit trail of the quantities and costs of materials received as well as a convenient means of controlling the authorization of material expenditures.

05/07/04 VENDOR MASTER LISTING PAGE 1									
P.O. #	LINE	VENDOR	ITEM	DESCRIPTION	DATE	QTY	COST	DATE	QTY
22		HALEY TITLE INSURANCE INC.							
		242 BRIDGEMAN SUITE 1002							
		SAN DIEGO, CA 92101							
120A-001		J.C. ASPHALT SUPPLY							
		10022 PRIARI ROAD							
		SAN DIEGO, CA 92023							
33		ARCHITECTURAL SERVICES & SUPP							
		10744 LUTHERMAN HWY							
		LA JOLLA, CA 92037							
74		INDUSTRIAL ELECTRICIANS GROUP							
		10022 PRIARI ROAD							
		SAN DIEGO, CA 92023							

## VENDOR REFERENCE AND ANALYSIS LISTING —

- Acts as a control list of acceptable vendors and as an aid to tracking each vendor's performance.

And when you get tired of running PMS-II yourself . . .

## BPS-II

### THE PROBLEM:

When you first get your PMS-II, and are running three or four projects, sitting at the computer and generating each of the reports you needed is not much of a chore — in fact, it is actually a lot of fun. But after you have several projects on your system, and the novelty of watching the programs go through their paces has worn off, tending the machine while it generates the many weekly reports you require can become an expensive and tiresome task.

### THE SOLUTION:

**BPS-II** is a batch processing system, which allows you to:

- 1) define the projects you are currently managing,
- 2) calculate and generate activity reports, GANTT charts, and edit listings, and
- 3) select options for these calculations and reports.

Then, with a single command from you, **BPS-II** will calculate and report against any number of projects with as many different options as your current PMS-II system, all from your pre-defined files, completely unattended by you.

If you will find yourself running the same reports against the same projects day after day or week after week, **BPS-II** can result in a considerable savings in time, money, boredom, and aggravation.

**BPS-II** has been designed to provide you with the greatest flexibility possible by allowing you to set up multiple independent files for:

- 1) projects to be processed,
- 2) reports to be generated, and
- 3) the sort, select, and format options to be used with the reports.

Then, any set of projects can be run against any set of reports using any set of options!

. . . let BPS-II do it for you.



# Maximum Project Control on a Micro Budget

Pricing:	Full System	Demo	Upgraded Demo
1) PMS-II	\$1295.00	\$50.00	\$1245.00
2) RMS-II	\$ 995.00	\$50.00	\$ 945.00
3) MMS-II	\$ 995.00	\$50.00	\$ 945.00
4) BPS-II	\$ 495.00		

(California residents please add 6% Sales Tax.)

## Discount Policy:

30% educational discount for recognized institutions. Demo system price applied toward full system price.

## Payment Terms:

Prepay or C.O.D. Next day air available via UPS Red Label (add \$20.00 per PMS-II system).

## Delivery:

All systems shipped within 24 hours ARO, UPS Blue Label (second day air).

## Freight:

N/C in U.S.A.

## About the Demo Systems

The demo systems come with full user documentation including tutorial and ALL the features of the full system except those which allow you to create or add to a project network. With the DEMO network that is included on your disk, you can explore every feature of PMS-II, RMS-II, or MMS-II, on your own machine, at your leisure. When you decide to purchase a full system, just return your demo disk(s) for an upgrade(s), and you will receive \$50 credit for each upgraded demo.

## ORDER FORM

- ☐ Please send one PMS-II demonstration system and user manual (\$50.00 — applicable towards the price of the full system)
- ☐ Please send one RMS-II demonstration system and user manual (\$50.00 — applicable towards the price of the full system) (requires PMS-II)
- ☐ Please send one MMS-II demonstration system and user manual (\$50.00 — applicable towards the price of the full system) (requires PMS-II)
- ☐ Please send full PMS-II system (\$1295.00)
- ☐ Please send full RMS-II system (\$995.00) (requires PMS-II)
- ☐ Please send full MMS-II system (\$995.00) (requires PMS-II)
- ☐ Please send full BPS-II system (\$495.00) (requires PMS-II)

Ordered by (print): \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Ext. ( ) \_\_\_\_\_

Disk Format: ☐ CP/M ☐ CP/M 86 ☐ PC DOS ☐ MSDOS

Disk Size: ☐ 8" ☐ 5 1/4"

Computer: \_\_\_\_\_ Make \_\_\_\_\_ Model \_\_\_\_\_

## SHIPPING INSTRUCTIONS/DEALER STAMP

DEMAND CONSTRUCTION SERVICES, INC.
7430 E. Caley Ave. Building I, Suite 350 ENGLEWOOD COLORADO 80111 (303) 740-8647

11772 Sorrento Valley Rd., Suite 100  
San Diego, California 92121

NORTH AMERICA MICA, INC.



(619) 481-6988  
Telex #701257 NAMICA UD

**Keeping you on  
The Critical Path . . .**



---

11772 Sorrento Valley Rd., Suite 100 • San Diego, CA 92121 • (619) 481-6998/Telex #701257 NAMICA UD

---

**APPENDIX D**  
**SUBCONTRACT BACKCHARGE**



**WaltersCM** A Bill L. Walters  
Company

7001 East Mississippi Avenue, Suite 200, Englewood, Colorado 80111, (303) 776-4289

### SUBCONTRACT BACKCHARGE

SUBCONTRACTOR:

Company \_\_\_\_\_

Date 11-1-84 Project Hyland Office Park

Subcontract # 3710-2505

Backcharge Cost Code 3710-2510

Notification Date 8-15-84

Under the terms of the subcontract agreement, referenced above, Walter CM has exercised its right and completed the following work:

Construction of three (3) 10-ft. Type R inlets and two (2) 5-ft. Type R inlets in the Private Road, excluding manhole rings, ladder rungs and grates supplied by Subcontractor, by mutual agreement. Per WCM letter dated 8-15-84, maximum backcharge total of 5 x \$2,016.00 = \$10,080.00 is applicable, as actual costs exceeded that maximum. (WCM Cost Distribution summaries, material/equipment invoices, and Payroll Distribution sheets are attached hereto.)

Per Paragraphs 19, 21, & 24 of the agreement, your next subcontract payment will be credited the following amount for reimbursement of our costs.

Vendor	Invoice No./WCM Labor	Cost
WCM labor (see attached)	8/19, 8/26, 9/2, 9/9, 9/16	\$10,446.69
Misc. vendors (see attached)	Materials & equipment	2,722.59
ACTUAL COSTS SUBTOTAL		\$13,169.28
Minimum Allowed minus Actual Costs = \$10,080.00 - \$13,169.28		(3,089.28)
Subtotal		\$10,080.00
Overhead ( <u>0</u> %)		-0-
TOTAL		\$10,080.00

Bill L. Walters Construction Management, Inc.

By

David M. Metcalf/Project Manager

White - Subcontractor • Yellow - Project Manager • Pink - Accounting

WCM-01 8/28/84

TNU, AUG 30, 1984, 4:47 PM

FILE CODE - J FUTURE DATE

--- PROJECT INCOME / COST RESTRICTION ---

SP4010

WALTERS COUNT. MANAGEMENT -09-

PAGE 2

8/31/84

PROJECT NO.	CODE NO.	PI NO.	TYPE NO.	VENUE / CLIENT NAME	INV. NO. / G/L TRANS.	INCOME AMOUNT	COST AMOUNT	BUDGET NO.	GEN. / LINE NO.
-------------	----------	--------	----------	---------------------	-----------------------	---------------	-------------	------------	-----------------

3710 WYLAND OFFICE PARK

(CONTINUED)

2310	01	*****		L&S.001904		0134.68		PR03-0171	300001P
2310	01	*****		CO.2001904		046.00		PR03-0172	301001P
2310	01	*****		L&S.002604		01939.99		PR04-0173	300001P
2310	01	*****		CO.2002604		9301.99		PR04-0176	301001P
2310	02	CONCRETE, INC.		23312		0699.30		PJ05-0239	302001P
2310	02	SUNSHINE REINER KIX CO.		STBT		0244.76		PJ05-0332	302001P
2310	02	SUNSHINE REINER KIX CO.		STBT		0149.30		PJ05-0334	302001P
TOTAL FOR CODE - 2310 -						63016.66			
2315	03	AND ENGINEERING, INC		1032		0014.00		PJ05-0327	303001P
2315	03	AND ENGINEERING, INC		1064		01210.00		PJ05-0329	303001P
TOTAL FOR CODE - 2315 -						02032.00			
19000	03	BRIDGEMAN COUNT & SUPPLY		STBT		010100.00		PJ05-0331	303001P
19000	03	O'DONNELL PLUMBING CO		STBT		010100.00-		PJ05-0336	303001P
TOTAL FOR CODE - 19000 -									
20310	06	*****		JE 29		022.71-		GL01-0012	303001P
TOTAL FOR CODE - 20310 -						022.71-			
TOTAL FOR PROJECT - 3710 -						612468.90			

COE / CODE EMP NO.	EMPLOYEE NAME	CRAFT DESC.	HOURS		COMPENSATION			BURDEN		TOTAL LABOR AND BURDEN
			REGULAR OVERTIME	*TOTAL*	REGULAR OVERTIME	TAXABLE NON-TAXABLE	*TOTAL*	COMPANY PROJECT	CRAFT *TOTAL*	
1050										
23932	COLQUITT KEVIN ROBER	LABORER	6.50		85.48			25.64		
				6.50			85.48		25.64	111.12
TOTAL FOR CODE	1050		6.50		85.48			25.64		
				6.50			85.48		25.64	111.12
2505										
77300	COLLECCHIO, JAMES R	LABORER	32.00		200.00			86.40		
				32.00			200.00		86.40	374.40
88400	8800 EDWARD STERNANT	LABORER	16.00		132.00			45.60		
				16.00			132.00		45.60	197.60
TOTAL FOR CODE	2505		48.00		440.00			132.00		
				48.00			440.00		132.00	572.00
2510										
19450	BROWN PHILIP JOHN	CARPENTERS-MEN	8.00		134.68			46.40		
				8.00			134.68		46.40	201.08
TOTAL FOR CODE	2510		8.00		134.68			46.40		
				8.00			134.68		46.40	201.08
TOTAL FOR PROJECT	3710		62.50		680.16			204.04		
				62.50			680.16		204.04	884.20

COST CODE EXP NO.	EMPLOYEE NAME	CRAFT DESC.	—S O U R C E—		—C O M P E N S A T I O N—			—B U R D E N—		TOTAL LABOR AND BURDEN
			REGULAR OVERTIME	*TOTAL*	REGULAR OVERTIME	TAXABLE NON-TAXABLE	*TOTAL*	COMPANY PROJECT	CRAFT *TOTAL*	
1000										
23932	CHLOUETT KEVIN BERN LADDER		8.00		105.20			31.56		
				8.00			105.20		31.56	136.76
TOTAL FOR CODE 1000			8.00		105.20			31.56		
				8.00			105.20		31.56	136.76
1470										
23940	CHERNIS WELCHER S LADDER		4.00		66.00			19.00		
				4.00			66.00		19.00	85.00
77500	SULLIVAN, JAMES R LADDER		2.00		18.00			13.50		
				2.00			45.00		13.50	50.50
09225	YOUNG ROBERT E LADDER		4.00		41.00			12.30		
				4.00			41.00		12.30	53.30
TOTAL FOR CODE 1470			6.00		59.00			45.60		
				12.00			132.00		45.60	197.60
2220										
23932	CHLOUETT KEVIN BERN LADDER		16.00		210.40			63.12		
				16.00			210.40		63.12	273.52
TOTAL FOR CODE 2220			16.00		210.40			63.12		
				16.00			210.40		63.12	273.52
2300										
23940	CHERNIS WELCHER S LADDER		8.00		80.00			26.00		
				8.00			80.00		26.00	114.00
77500	SULLIVAN, JAMES R LADDER		30.00		270.00			81.00		
				30.00			270.00		81.00	351.00
00440	WOOD EDWARD STEWART LADDER		4.00		30.00			11.40		
				4.00			30.00		11.40	49.40
09225	YOUNG ROBERT E LADDER		44.00		431.00			123.30		
				44.00			431.00		123.30	506.30
TOTAL FOR CODE 2300			86.00		847.00			254.10		
				86.00			847.00		254.10	1,101.10
2310										
10325	ALLEN JENNIFER	COMPENSATED-NEE	24.00		434.04			130.21		
				24.00			434.04		130.21	564.25
19400	WILSON PHILIP JOHN	COMPENSATED-NEE	32.00		610.72			185.62		
				32.00			610.72		185.62	804.34
23940	CHERNIS WELCHER S LADDER		16.00		170.00			62.70		
				16.00			209.00		62.70	271.70
73040	SIMILITON JOHN S	COMPENSATED-NEE	37.50		670.19			203.46		
				37.50			670.19		203.46	801.63
TOTAL FOR CODE 2310			109.50		1,944.95			581.99		
				111.50			1,939.95		581.99	2,531.44



Mailing Address: P.O. Box 17287 • Denver, Colo. 80217  
 Office and Plant: 130 South Santa Fe Drive • Denver, Colo. 80223  
 (303) 777-3083

SOLD TO: WALTERS CONST NGMT INC  
 7931 E MAPLEWOOD AVE  
 SUITE 200  
 ENGLEWOOD CO 80111

DATE ORDERED	DATE DELIVERED	INVOICE NO
08/22/84	08/22/84	023512
CUSTOMER ORDER NUMBER		

INVOICE

SHIP TO: BANK OF WESTMINSTER  
 BANK OF WESTMINSTER  
 9191 SHERIDAN BLVD  
 WESTMINSTER CO

SHIP TO	SHIP FROM	SHIP DATE	SHIP TIME	SHIP METHOD	SHIP TO	SHIP FROM	SHIP DATE	SHIP TIME	SHIP METHOD
SHIP TO	SHIP FROM	SHIP DATE	SHIP TIME	SHIP METHOD	SHIP TO	SHIP FROM	SHIP DATE	SHIP TIME	SHIP METHOD

ORDER NO.	INVOICE DATE	INVOICE BY	ENTERED BY	CHK	CASH	TERMS	ALL CHARGES ARE PAYABLE ON OR BEFORE THE 15TH OF MONTH FOLLOWING PURCHASE DATE. PAYMENT MUST BE MADE FOR SHORTAGE ON DAMAGE MUST BE MADE IMMEDIATELY	
31	08/22/84	SMP	SMP	X		CUST # 3797	ATM: STEEL CONTRACT	
SPECIAL INSTRUCTIONS: 6632 JS								
ORDERED	UNIT	ITEM NO / DESCRIPTION	QUANTITY	SHIPPED	BACK ORDERED	PRICE	UNIT	AMOUNT
1	LOT	MS529	1			675.00	LOT	675.00
CURB INLETS EXTRA TO CONTRACT								

RECEIVED

AUG 28 1984

CONRESKO INC.

YOU MAY DEDUCT \$6.75 IF PAID BY 9/10/84					
BASE TOTAL	CREDIT ON	WEIGHT	DELIVERY	SALES TAX	MISC
675.00		0	.00	3.60 X 24.30	.00
THANK YOU					PAY THIS AMOUNT
					699.30



**10-370 - 2510**  
**482 CY**  
**Rad**

**Mix Co.**  
 Plant Brighton  
 11755 Brighton Rd.  
 4/10 at 11:00 AM

PRICE		AMOUNT
1	AIR ENTRAPMENT	
1	POZZITY: 322 3/4 EARLY	
1	CALCIUM CHLORIDE	
1	LINE CUMS, GUTTER, PAVING, CUTTINGS	
1	PLATWORK, FLOOR	
1	MAX SLUMP 3 INCH	
1	PUMP MIX	

**2510**

**SERVICE CHARGE:** FOR LOADS ORDERED LESS THAN 4 CU YDS.

Per Three To	Waiting Time Will Be Charged For At The
Unload This Load	RATE OF \$20.00 PER HOUR (85¢ PER MIN) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT

**WATER**  
 ADDITIONAL ADDED TO JOB  
 ON THE JOB WILL BE THE  
 PUMPERS RESPONSIBILITY ON JOB

**3** Gals.  
 Finished Unloading

**Signature** *[Signature]*

Plant  
Attyada  
5400 Fenton  
Phone 421-0720

Suburban Reddi Mix Co.  
Mail 1300 Wadsworth  
Brighton  
11755 Brighton Rd.  
Phone 421-0720

Order No. 3710-2510  
Date 8-24-84  
Customer's Order No. 3710  
Cubic Yds. Ordered 24.0  
CY Ordered 18.8

Driver Dave  
3710  
Date 8-24-84  
Customer's Order No. 3710  
Cubic Yds. Ordered 24.0  
CY Ordered 18.8

Name  
Address  
92nd & Standard

Name  
Address  
92nd & Standard

QTY	CONCRETE	PRICE	AMOUNT
24	CONCRETE TYPE 2 1/4 IN. • 52.50		1143.50
	AIR ENTRAINMENT YES NO		
	POZZOLITH 322 344 EARLY		
	CALCIUM CHLORIDE		
	USE CURB GUTTER PAVING FOOTINGS WALLS		
	FLATWORK FLOOR		
	MAX SLUMP 3 INCH		
	PUMP MIX		
<p>PRICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU. YDS.</p> <p>Free Time To Waiting Time Will Be Charged For At The Rate Of \$39.00 Per Hour (85¢ Per Min.) Or Any Part Thereof For Unloading Time Over Free Time Written At Left</p> <p>20</p> <p>Water Added To The Mix On The Job Will Be The Purchaser's Responsibility</p> <p>Water Added 4 Gals</p> <p>Left Plant 1:30 Arrived Job 2:00</p> <p>Suburban Reddi Mix Co. Assumes No Responsibility For Damages Beyond The Curb Or Property Line If You Designate Driver To Do Work On Property Line You Will Be Responsible For Any Damage That May Occur</p> <p>FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE</p> <p>6722 Customer's Signature</p>			
	STATE TAX		
	CITY TAX		
	RTD TAX		
	COUNTY TAX		
	SUB TOTAL		
	WAITING TIME		
	TOTAL CHARGE		1495.80

CAUTION: Freshly mixed concrete, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any contact occurs, get to a doctor immediately and report it with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN.

MON, OCT 1, 1964, 3:04 PM

FILE CODE - J FUTURE DATE

— PROJECT INCOME / COST ESTIMATION —

074010

BILTING CONST. MANAGEMENT -00-

PAGE 2

9/31/64

PROJECT NO.	CORE NO.	FE NO.	TYPE NO.	VENOR / CLIN	NO. / C/L	INCOME	COST	NET	GEN. / LEND
NO.	NO.	NO.	NO.	NAME	FEEDS	AMOUNT	AMOUNT	BL.	OCT. NO.

3710 INLAND OFFICE PARK

CONTINUED

1300	01	*****	LAB. 070004	032.25	FE00-0107	300001P
1300	01	*****	CB. 2070004	00.60	FE00-0108	301001P

TOTAL FOR CORE - 1300 - 0194.60

1470	01	*****	LAB. 070004	0217.30	FE00-0137	300001P
1470	01	*****	CB. 2070004	007.21	FE00-0138	301001P

TOTAL FOR CORE - 1470 - 0300.39

1900	03	A. S. ROSENBERG, INC.	03010	073.00	FE00-0143	300001P
------	----	-----------------------	-------	--------	-----------	---------

TOTAL FOR CORE - 1900 - 073.00

2210	01	*****	LAB. 070004	0164.00	FE01-0130	300001P
2210	01	*****	CB. 2070004	000.20	FE01-0136	301001P

TOTAL FOR CORE - 2210 - 0213.20

2220	01	*****	LAB. 070004	0390.20	FE00-0137	300001P
2220	01	*****	CB. 2070004	0119.06	FE00-0140	301001P
2220	01	*****	LAB. 070004	0000.00	FE00-0167	300001P
2220	01	*****	CB. 2070004	004.00	FE00-0168	301001P

TOTAL FOR CORE - 2220 - 0801.66

2300	01	*****	LAB. 070004	0401.25	FE01-0137	300001P
2300	01	*****	CB. 2070004	0120.30	FE01-0138	301001P
2300	01	*****	LAB. 070004	0764.00	FE00-0141	300001P
2300	01	*****	CB. 2070004	0229.34	FE00-0142	301001P
2300	01	*****	LAB. 070004	0300.00	FE00-0173	300001P
2300	01	*****	CB. 2070004	0113.76	FE00-0174	301001P
2300	02	O'DONNELL PLANNING CO	0707	070000.00	FE01-0001	300001P
2300	02	O'DONNELL PLANNING CO	0707	000070.00	FE00-0077	300001P

TOTAL FOR CORE - 2300 - 010040.07

2310	01	*****	LAB. 070004	00472.42	FE01-0139	300001P
2310	01	*****	CB. 2070004	0701.73	FE01-0160	301001P
2310	01	*****	LAB. 070004	01000.31	FE00-0143	300001P
2310	01	*****	CB. 2070004	0001.49	FE00-0144	301001P
2310	01	*****	LAB. 070004	01770.30	FE00-0175	300001P
2310	01	*****	CB. 2070004	0031.17	FE00-0176	301001P
2310	02	*****	JS 000	0719.13	0101-0015	300001P
2310	02	CEB SUPPLY	30101	007.36	FE00-0040	300001P
2310	02	CEB SUPPLY	30100	007.04	FE00-0000	300001P

PROJECT CASE PT TYPE VENDOR / CLIENT EMP. NO. / C/L TOWN. INCOME COST DEBIT GEN. / LENS NO. ACCT. NO.

2710 WYLAND OFFICE PARK

CONTINUED

2310	02	SUNSHINE HEINE KIX CO.	STRT	0130.90	P300-0121	302001P
2310	02	SUNSHINE HEINE KIX CO.	STRT	0112.96	P300-0123	302001P
2310	02	SUNSHINE HEINE KIX CO.	STRT	0217.86	P300-0133	302001P
2310	02	SUNSHINE HEINE KIX CO.	STRT	0174.77	P300-0135	302001P
2310	02	SUNSHINE HEINE KIX CO.	STRT	0136.83	P300-0140	302001P
2310	02	PAUL & ANNE'S SUPPLY INC.	7436	043.01	P304-0144	302001P
2310	04	CCS SUPPLY	30990	010.34	P304-0046	304001P
2310	04	CCS SUPPLY	30990	012.96	P304-0047	304001P

CANNOT LOCATE COPY OF STATEMENT

TOTAL FOR CASE - 2310 -

0916.74 → \$9,124.41

2310	03	AND ENGINEERING, INC	1092	0047.00	P300-0247	303001P
2310	03	AND ENGINEERING, INC	1092	0204.00	P300-0248	303001P

TOTAL FOR CASE - 2310 -

0091.00

2600	03	SHAWNEE SAND & GRAVEL CO	1	010122.00	P304-0040	303001P
2600	03	ZIS ZAG CONCRETE WORKING C	10010	090.00	P304-0172	303001P

TOTAL FOR CASE - 2600 -

010212.00

2620	03	ZIS ZAG CONCRETE WORKING C	10010	090.00	P304-0174	303001P
------	----	----------------------------	-------	--------	-----------	---------

TOTAL FOR CASE - 2620 -

090.00

2620	03	AND ENGINEERING, INC	1092	0031.00	P300-0243	303001P
2620	03	ZIS ZAG CONCRETE WORKING C	10000	0160.00	P304-0171	303001P
2620	03	ZIS ZAG CONCRETE WORKING C	10042	0000.00	P304-0173	303001P

TOTAL FOR CASE - 2620 -

01091.00

2720	01	.....	LAB. 090904	0210.00	P002-0143	300001P
2720	01	.....	CO. 2090904	063.12	P002-0146	301001P
2720	03	AND ENGINEERING, INC	1092	0906.00	P300-0246	303001P

TOTAL FOR CASE - 2720 -

01279.32

2730	01	.....	LAB. 093004	0107.00	P000-0109	300001P
2730	01	.....	CO. 2093004	022.10	P000-0110	301001P
2730	02	SUNSHINE HEINE KIX CO.	STRT	01200.91	P300-0124	302001P
2730	02	SUNSHINE HEINE KIX CO.	STRT	0331.73	P300-0120	302001P
2730	02	SUNSHINE HEINE KIX CO.	STRT	0001.97	P300-0134	302001P
2730	02	SUNSHINE HEINE KIX CO.	STRT	01067.73	P300-0136	302001P
2730	02	SUNSHINE HEINE KIX CO.	STRT	0047.12	P300-0141	302001P
2730	02	SUNSHINE HEINE KIX CO.	STRT	01331.32	P300-0142	302001P
2730	02	SUNSHINE HEINE KIX CO.	STRT	01030.00	P300-0144	302001P

TOTAL FOR CASE - 2730 -

04073.13

COST CODE EMP NO. EMPLOYEE NAME	CRAFT DESC.	HOURS		COMPENSATION			BURDEN		TOTAL LABOR AND BURDEN
		REGULAR OVERTIME	*TOTAL*	REGULAR OVERTIME	TAXABLE NON-TAXABLE	*TOTAL*	COMPANY PROJECT	CRAFT *TOTAL*	
1000									
23932 COLQUHITT KEVIN ROGER LABORER		16.00	16.00	210.00		210.00	63.12	63.12	273.32
TOTAL FOR CODE 1000		16.00	16.00	210.00		210.00	63.12	63.12	273.32
2215									
23940 CORRENO BELCHER S LABORER		8.00	8.00	88.00		88.00	26.40	26.40	114.40
80640 BOND EDWARD STEWART LABORER		8.00	8.00	76.00		76.00	22.00	22.00	98.00
TOTAL FOR CODE 2215		16.00	16.00	164.00		164.00	49.20	49.20	213.20
2305									
23940 CORRENO BELCHER S LABORER		8.00	8.00	88.00		88.00	26.40	26.40	114.40
77300 SOLLECCHIO, JAMES S LABORER		8.00	8.00	72.00		72.00	21.60	21.60	93.60
80640 BOND EDWARD STEWART LABORER		8.00	8.00	76.00		76.00	22.00	22.00	98.00
89225 YOUNG ROBERT K LABORER		21.00	21.00	215.25		215.25	64.50	64.50	279.63
TOTAL FOR CODE 2305		45.00	45.00	431.25		431.25	135.30	135.30	306.63
2510									
6325 ALEMAN JONASO CARPENTERS-MEN		40.00	40.00	723.40		723.40	217.02	217.02	940.42
9450 BROWN PHILIP JOHN CARPENTERS-MEN		32.00	32.00	610.72		610.72	185.62	185.62	804.34
23932 COLQUHITT KEVIN ROGER LABORER		16.00	16.00	210.00		210.00	63.12	63.12	273.32
23940 CORRENO BELCHER S LABORER		16.00	16.00	176.00		176.00	52.00	52.00	228.00
73040 SINGLETON JOHN S CARPENTERS-MEN		40.00	40.00	723.40		723.40	217.02	217.02	940.42
89225 YOUNG ROBERT K LABORER		2.00	2.00	20.30		20.30	6.15	6.15	26.63
TOTAL FOR CODE 2510		146.00	146.00	2,472.42		2,472.42	741.73	741.73	3,214.15
TOTAL FOR PROJECT 3710		223.00	223.00	3,290.67		3,290.67	909.43	909.43	4,200.30

PROJECT 3710 HYLAND OFFICE PARK  
WALTERS CRAFT IMPROVEMENT -07-

PAYROLL DISTRIBUTION  
PAGE 26

PRO263  
9/09/04

COST CODE EMP NO.	EMPLOYEE NAME	CRAFT DESC.	---HOURS---		---COMPENSATION---			---BURDEN---		TOTAL LABOR AND BURDEN
			REGULAR OVERTIME	*TOTAL*	REGULAR OVERTIME	TAXABLE NON-TAXABLE	*TOTAL*	COMPANY PROJECT	CRAFT *TOTAL*	
09223	YOUNG ROBERT H	LABORER	.50		5.13			1.94		
				.50			5.13		1.94	6.67
TOTAL FOR CODE 2505			53.00		737.92			229.33		
			1.00	34.00	26.36		764.40		229.33	993.83
2510										
10323	ALEXANDER JONAS	CARPENTERS-MEN	24.00		434.04			130.21		
				24.00			434.04		130.21	564.25
19450	BROWN PHILIP JOHN	CARPENTERS-MEN	16.00		309.36			92.81		
				16.00			309.36		92.81	402.17
23952	CHLOUETT KEVIN ROGER	LABORER	16.00		210.40			63.12		
				16.00			210.40		63.12	273.52
23960	CORREAS NELSON B	LABORER	8.00		80.00			26.40		
				8.00			80.00		26.40	114.40
73040	SINGLETON JOHN S	CARPENTERS-MEN	29.50		533.51			160.05		
				29.50			533.51		160.05	693.56
09223	YOUNG ROBERT H	LABORER	12.00		123.00			36.90		
				12.00			123.00		36.90	159.90
TOTAL FOR CODE 2510			105.50		1,690.31			509.49		
				105.50			1,690.31		509.49	2,207.80
2725										
23952	CHLOUETT KEVIN ROGER	LABORER	16.00		210.40			63.12		
				16.00			210.40		63.12	273.52
TOTAL FOR CODE 2725			16.00		210.40			63.12		
				16.00			210.40		63.12	273.52
TOTAL FOR PROJECT 3710			247.00		3,396.21			1,026.83		
			1.00	248.00	26.36		3,422.77		1,026.83	4,449.60

PROJECT 2710 HYLAND OFFICE PARK  
 BUILDING CONTRACT -87-

PAYROLL DISTRIBUTION  
 PAGE 22

PROJECT  
 9/16/84

COST CODE EMP NO.	EMPLOYEE NAME	CRAFT DESC.	HOURS		COMPENSATION			BURDEN		TOTAL LABOR AND BURDEN
			REGULAR OVERTIME	TOTAL*	REGULAR OVERTIME	TRAVEL NON-TAXABLE	TOTAL*	COMPANY PROJECT	CRAFT TOTAL*	
1000										
2392	COLQUHITT KEVIN ROGER	LABORER	16.00		210.40			63.12		
				16.00			210.40		63.12	273.52
TOTAL FOR CODE 1000			16.00	16.00	210.40		210.40	63.12	63.12	273.52
1300										
3660	WHEELIPS LARRY LEO	LABORER	0.00		00.00			23.00		
				0.00			00.00		23.00	111.00
TOTAL FOR CODE 1300			0.00	0.00	00.00		00.00	23.00	23.00	111.00
2300										
2360	CORRENO MELCHOR S	LABORER	8.00		00.00			26.40		
				8.00			00.00		26.40	114.00
7700	BELLECKER, JAMES H	LABORER	14.30		130.30			39.15		
				14.30			130.30		39.15	169.65
0060	WUO EDWARD STEWART	LABORER	16.00		132.00			45.60		
				16.00			132.00		45.60	197.60
0925	YOUNG ROBERT K	LABORER						4.61		
				1.00	13.30		13.30		4.61	19.99
TOTAL FOR CODE 2300				39.30	270.30		270.30	113.76	113.76	301.64
2310										
10325	ALDRIN JORDAN	CARPENTER-MEN	33.00		396.01			179.04		
				33.00			396.01		179.04	775.00
19430	BRUNN PHILIP JOHN	CARPENTER-MEN	24.00		464.04			147.74		
				25.00	20.43		498.47		147.74	640.21
73040	SCHEIDT JOHN S	CARPENTER-MEN	32.00		370.72			101.30		
				33.00	26.35		400.27		101.30	706.00
0060	WUO EDWARD STEWART	LABORER	0.00		76.00			22.00		
				0.00			76.00		22.00	98.00
TOTAL FOR CODE 2310				99.00	1,713.37		1,770.30	331.16	331.16	2,301.71
3700										
3660	WHEELIPS LARRY LEO	LABORER	4.00		43.00			12.90		
				4.00			43.00		12.90	30.90
TOTAL FOR CODE 3700			4.00	4.00	43.00		43.00	12.90	12.90	30.90
TOTAL FOR PROJECT 2710			163.30	166.30	2,423.07		2,493.63	708.74	708.74	3,204.57



DELIVERY ADDRESS

THE BROOMFIELD LUMBER CO., Inc.

LUMBER, HARDWARE, PAINT, GLASS, STEEL

7805 W. 120th

P.O. BOX 305

Phone 488-2387

BROOMFIELD, COLO. 80020

7711

Name *Whitman CM*Date *8-14-84*

OUR CREDIT POLICY: Terms are 2% 10th, Net 30th. Discounts are not allowed on new sharpening, mill expense, mill items or bid items or unless otherwise noted. Accounts are billed at the end of each month and are payable as noted above. A Service Charge of 2% per month on any unpaid balance as of the 25th of the month following billing will be assessed. Additionally, account privileges will be suspended until the unpaid balance is cleared up. If this account is charged for collection, customer agrees to pay reasonable attorney's fees.

Job #		Description		CHARGE	CREDIT
17105					
Quantity	Unit	Description	Price	TOTAL	
2		Handlans	26.15	12	3.3
1		Heats	2.21	2.21	
1		Concrt 3/4 AC		8.45	
2		Winn Bauls	21.25	2.52	
16		4x8 3/4 AC	20.75	332	CC
24		2x4x12	3.36	36	1.7
6		1x4x12 #3	1.36	8	1.6
4		1x12x12 #3	6.84	27	3.6
16		2x4x16	4.59	73	1.4
				517	CC
Received By		SALES TAX		36	1.7
		TOTAL		583	1.7

TERMS: 2% 10th, Net 30th

9/31/84

JOURNAL ENTRY TO

WCM #3710-2510 - JET 28



2/3/1984  
JOURNAL ENTRY TO  
ACCOUNT 370-250 — JET 28



**CCS** SUPPLY, INC.  
5150 FOX STREET  
DENVER, COLORADO 80216  
(303) 296-0150

INVOICE N<sup>o</sup> 58101

RECEIVED  
SEP 10 1984

DATE 8/20/84

SOLD  
TO

Walters CM  
7951 E maplewood, Ave.  
Suite 200  
Englewood, CO 80111

SHIP  
TO

9191 Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Paid. or Coll.
26227	17108	2	NET 30	WC	
QUANTITY	DESCRIPTION			PRICE	AMOUNT
200 ea	8' LE Cones			27.00/c	54.00
				State	1.62
				City	1.62
				RTD	.32
					57.56

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE



**SUPPLY, INC.**  
5150 FOX STREET  
DENVER, COLORADO 80216  
(303) 296-0150

RECEIVED

SEP 10 1984

INVOICE No 58188

DATE 8-21-84

SOLD TO

Walters C.M. Construction  
5975 S. Synacuse #107  
Englewood, Co 80111

SHIP TO

Westminster bank 400

OUR ORDER NO	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Paid or Coll
C26278	17110	2	NET 30	WC	
QUANTITY	DESCRIPTION			PRICE	AMOUNT
200 ea.	8" SE Cone snapties			23.00c	46.00
				State	1.38
				City	1.38
				RTD	.28
					49.04

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE

Plant  
Ananda  
5400 Fenton  
Phone 421-0728

Suburban Reddi Mix Co.  
Plant  
Brighton  
11755 Brighton Rd.  
Phone 421-0728

Driver Date Trk No 67 Cyclic Ydg. Ordered 18-18 CY Ordered 18-18  
Customer's Order No.

Name  
Address  
Job  
Walden C. M.  
92nd & Spaulding

QTY.	CONCRETE	PRICE	AMOUNT
2	CY 6" BAX TYPE 2 3/4" PK.		
	1001 m. 18 ft. 55" 29000		
	AIR ENTRAINMENT YES		
	POZZOLITH 322 344 EARLY		
	CALCIUM CHLORIDE %		
	USE CURB GUTTER, PAVING, FOOTINGS, WALLS.		
	MAX. CLUMP 4" INCH		
	PUMP MIX		

**SERVICE CHARGE:** FOR LOADS ORDERED LESS THAN 4 CU YDS.

Free Time To Unload This Load 14

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$39.00 PER HOUR (85¢ PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT.

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY.

Left Plant 2:45 Arrived Job 3:15

Water Added On Job 6

State Tax 29.00 City Tax 29.00 RTD Tax 5.94 COUNTY TAX 10.35 SUB TOTAL 10.35 WAITING TIME 10.35 TOTAL 10.35 CHARGE 10.35

Suburban Reddi Mix Co. is not responsible for damages beyond the curb or property line if you designate driver to go beyond curb or property line you will be responsible for any damage that may occur.

FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 84%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE.

Z 8832 Customer's Signature

CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately with water for 15 minutes.

SE'S COPY  
di Mix Co.  
Plant  
Brighton  
11755 Brighton Rd.  
Phone 421-0728

Driver Date Trk No 18-18 CY Ordered 18-18  
Customer's Order No.

Name  
Address  
Job  
Walden C. M.  
92nd & Spaulding

QTY.	CONCRETE	PRICE	AMOUNT
2	CY 6" BAX TYPE 2 3/4" PK.		
	1001 m. 18 ft. 55" 29000		
	AIR ENTRAINMENT YES		
	POZZOLITH 322 344 EARLY		
	CALCIUM CHLORIDE %		
	USE CURB GUTTER, PAVING, FOOTINGS, WALLS.		
	MAX. CLUMP 4" INCH		
	PUMP MIX		

**SERVICE CHARGE:** FOR LOADS ORDERED LESS THAN 4 CU YDS.

Free Time To Unload This Load 14

WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$39.00 PER HOUR (85¢ PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT.

ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY.

Left Plant 2:45 Arrived Job 3:15

Water Added On Job 6

State Tax 29.00 City Tax 29.00 RTD Tax 5.94 COUNTY TAX 10.35 SUB TOTAL 10.35 WAITING TIME 10.35 TOTAL 10.35 CHARGE 10.35

Suburban Reddi Mix Co. is not responsible for damages beyond the curb or property line if you designate driver to go beyond curb or property line you will be responsible for any damage that may occur.

FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 84%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE.

Z 8832 Customer's Signature

CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin where possible and wash exposed skin areas promptly with water. If any cement mixtures get into eyes, rinse immediately with water for 15 minutes.

CUSTOMER'S COPY

Plant  
Arvada  
5400 Fenton  
Suburban Reddli Mix Co. Plant  
11755 Brighton Rd.  
Brighton  
Mail: 1300 Westmore Ave., Colo. 80022  
Phone 421-0720

Driver *Allen* Tel. No. *58* Curb Vg. Order  
Customer's Order No. *3710-2510* Date *9-10* 19 *84*

Name *Walters*  
Job Address *52nd & Shoshone*

QTY	CONCRETE	PRICE	AMOUNT
4	4 CY 2" BAY TYPE 2 1/2 IN. •	53.50	214.00
	AIR ENTRAINMENT	YES	
	POZZOLITH 322 344 EARLY		
	CALCIUM CHLORIDE		
	USE CURB, GUTTER, PAVING, FOOTINGS, WALLS, PLATWORK, FLOOR		
	MAX SLUMP 4 INCH		
	PUMP MIX		
<p>SERVICE CHARGE: FOR LOADS ORDERED LESS THAN 4 CU YDS.</p> <p>Free Time To Unload This Load: 28</p> <p>WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$30.00 PER HOUR (85¢ PER MIN.) OR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT</p> <p>ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY</p> <p>Left Plant: <i>12:15</i> Arrived Job: <i>12:35</i> Finished Unloading: <i>1:10</i></p> <p>Suburban Reddli Mix Co. MAKES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE IF YOU DESIGNATE DRIVER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR.</p> <p>FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE</p> <p>Z 7946 Customer's Signature <i>A. J. Walters</i></p> <p>CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin when possible and wash exposed skin areas promptly with water. If any cement splatters get into eyes, rinse immediately and repeatedly with water and get prompt medical attention. KEEP OUT OF REACH OF CHILDREN</p>			
	STATE TAX		
	CITY TAX		
	RTD TAX		
	COUNTY TAX		
	SUB TOTAL		
	WAITING TIME		
	TOTAL CHARGE		

**CUSTOMER'S COPY**  
**Suburban Reddix Mix Co.**  
 Plant Brighton  
 11755 Brighton Rd.  
 Ardara, Colo. 80621  
 Phone 421-0720

Job No. 47 Date 8-30-84  
 Order No. 243-246-CT Order

Walters Concrete  
 Gandy Sherida

QTY.	PRICE	AMOUNT
3 1/2	1157.50	4051.25
SAX TYPE 2 34 IN. 52.50		
CONCRETE		
AIR ENTRAINMENT		
POZZOLITH 322 344 14 1/2		
CALCIUM CHLORIDE		
USE CURB GUTTER PAVING		
FLATWORK FLOOR		
MAX SLUMP 2		
PUMP MIX		
FOR LOADS ORDERED LESS THAN 4 CU YDS.		
WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$10.00 PER HOUR (8:00 AM TO 5:00 PM) FOR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT.		
23		
ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY.		
Left Plant Arrived Job Finished Unloading		
2 45	3 15	1 40
SUBURBAN REDDIX MIX CO. ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE IF YOU DESIGNATE WORKER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR.		
FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE.		
2 45	3 15	1 40
STATE TAX		
CITY TAX		
COUNTY TAX		
SUB TOTAL		
WAITING TIME		
TOTAL		
CHARGE		

7 7242 Customer's Signature *Walters Concrete*  
 CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin. Wash immediately with water. If any contact occurs, get into area immediately and wash exposed skin areas promptly with water. If any contact occurs, get into area immediately and wash exposed skin areas promptly with water. If any contact occurs, get into area immediately and wash exposed skin areas promptly with water.

**STATEMENT COPY**  
**Suburban Reddix Mix Co.**  
 Plant Brighton  
 11755 Brighton Rd.  
 Ardara, Colo. 80621  
 Phone 421-0720

Job No. 47 Date 8-30-84  
 Order No. 243-246-CT Order

Walters Concrete  
 Gandy Sherida

QTY.	PRICE	AMOUNT
3 1/2	1157.50	4051.25
SAX TYPE 2 34 IN. 52.50		
CONCRETE		
AIR ENTRAINMENT		
POZZOLITH 322 344 14 1/2		
CALCIUM CHLORIDE		
USE CURB GUTTER PAVING		
FLATWORK FLOOR		
MAX SLUMP 2		
PUMP MIX		
FOR LOADS ORDERED LESS THAN 4 CU YDS.		
WAITING TIME WILL BE CHARGED FOR AT THE RATE OF \$10.00 PER HOUR (8:00 AM TO 5:00 PM) FOR ANY PART THEREOF FOR UNLOADING TIME OVER FREE TIME WRITTEN AT LEFT.		
23		
ANY WATER ADDED TO THE MIX ON THE JOB WILL BE THE PURCHASER'S RESPONSIBILITY.		
Left Plant Arrived Job Finished Unloading		
2 45	3 15	1 40
SUBURBAN REDDIX MIX CO. ASSUMES NO RESPONSIBILITY FOR DAMAGES BEYOND THE CURB OR PROPERTY LINE IF YOU DESIGNATE WORKER TO GO BEYOND CURB OR PROPERTY LINE YOU WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR.		
FINANCE CHARGE AT THE RATE OF 2% PER MONTH (APR 24%) WILL BE ON ALL ACCOUNTS NOT PAID WITHIN 30 DAYS FROM DATE OF PURCHASE.		
2 45	3 15	1 40
STATE TAX		
CITY TAX		
COUNTY TAX		
SUB TOTAL		
WAITING TIME		
TOTAL		
CHARGE		

7 7242 Customer's Signature *Walters Concrete*  
 CAUTION: Freshly mixed cement, mortar, concrete, or grout may cause skin injury. Avoid contact with skin. Wash immediately with water. If any contact occurs, get into area immediately and wash exposed skin areas promptly with water. If any contact occurs, get into area immediately and wash exposed skin areas promptly with water. If any contact occurs, get into area immediately and wash exposed skin areas promptly with water.

# TOOL & ANCHOR SUPPLY INC.

'The Construction Supply Professionals'  
P.O. Box 904 • Aurora, Colorado 80040

RECEIVED

INVOICE

7436

AUG 29 1984

(303) 320-4573

INVOICE DATE 8-27-84	SALESPERSON Bill L. Walters
BILL L. WALTERS CONSTRUCTION MATERIALS	

7191 Skene Blvd.

TO Walter Am  
7951 E. Meplwood #200  
Englewood, Colo 80111

QTY. ORDERED	B/O	QTY. SHIPPED
1		1
1		1

DESCRIPTION  
1 1/4" N/Cs. Die  
can rapid tap  
cutting fluid

Reg. d.o. real

UNIT PRICE	TOTAL
34.95	34.95
6.75	6.75
	41.70

State Tax  
City Tax  
RTD Tax  
Shipping Charges  
TOTAL

126

A finance charge of 2% per month,  
equal to 21% APR, will be charged  
on all past due amounts.

Please pay directly from this invoice.  
No statement will be sent unless requested.

Thank You

43.41



**SUPPLY, INC.**  
6150 FOX STREET  
DENVER, COLORADO 80216  
(303) 296-0150

RECEIVED

SEP 10 1984

BILL L. WALTERS  
CONSTRUCTION MANAGEMENT, INC.

INVOICE R 30990

DATE 8-21-84

SOLD TO

Walters C.M. Construction

SHIP TO

9191 N. Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Paid. or Coll.
R1306	17112	2	NET 30		
QUANTITY	DESCRIPTION			PRICE	AMOUNT
	Rental Equipment per attached			.10 each	10.00
				State	.30
				RTD	.06
					10.36

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE.





**CCS SUPPLY CO.**  
 DISTRIBUTORS OF CONSTRUCTION MATERIALS  
 3150 FOX  
 DENVER, COLORADO 80216  
 TELEPHONE 303-428-9120

RENTAL INVOICE

SOLD TO: *W. J. C. M.* Job: *3700-2510 R20* JOB LOCATION: *9191 N. Sheridan*

DATE SHIPPED	CUSTOMER ORDER NUMBER <i>17112</i>	TERMS 15 TO DAYS-NET 30 DAYS	INVOICE DATE <i>5-22-84</i>	INVOICE NUMBER
QUANTITY <i>100 ea</i>	DESCRIPTION <i>Steel Wedges</i>			AMOUNT <i>.10 ea / mo</i>
<p>All Equipment shall be returned in same condition as received. Any Damage or Cleaning will be at lessee expense. Please check equipment before accepting.</p> <p>SIGNATURE _____</p>				

RENTAL PERIOD	DATE	TIME OUT	TO	DATE	TIME IN	TOTAL
RENTAL RATE - DAY	WEEK	MONTH				
PURCHASE OPTION	YES <input type="checkbox"/>	NO <input type="checkbox"/>	PRICE \$			
SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE HEREOF, WHICH ARE MADE A PART HEREOF AS IF FULLY SET FORTH HEREIN ABOVE.						
I HAVE READ THE TERMS AND CONDITIONS OF THIS LEASE AGREEMENT AND AGREE THERETO:						
BY <i>[Signature]</i> NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL LESSEE						
TITLE DATE						
						SALES TAX
						TRANSPORTATION OUT
						TRANSPORTATION IN
						TOTAL

ALL INSURANCE TO BE PROVIDED AT LESSEE EXPENSE

## PURCHASE ORDER

Job & Cost Code 3700-250 Bldg. Permit No. \_\_\_\_\_ Date 8/20/21 19 54  
Excludes City Sales Tax on Purchase  
To C.C.S. SUPPLY For INLET FORMS  
Address 5150 ELY ST. Date Required 8/17/24  
Ship To WATKINS C.M. How Ship WICHA Pickup  
Address 9191 SHEPARDAN RD. WESTMINSTER CO. Terms \_\_\_\_\_

[illegible]

**IMPORTANT**

OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, PACKAGES, ETC.  
PLEASE NOTIFY US IMMEDIATELY IF YOU ARE UNABLE TO SHIP COMPLETE  
ORDER BY DATE SPECIFIED.

**Purchasing Agent**

**White—Supplier • Green—File • Canary—Accounting • Pink—Field • Gold—Numeric Copy**

**WCM-008**



**SUPPLY, INC.**  
5150 FOX STREET  
DENVER, COLORADO 80216  
(303) 296-0150

RECEIVED

SEP 10 1984

INVOICE

R 30988

DATE 8/20/84

BILL WALTERS  
CONSTRUCTION MANAGEMENT, INC.

SOLD TO

Walters CM

SHIP TO

9191 Sheridan

OUR ORDER NO	CUSTOMER ORDER NO	SALESMAN	TERMS	SHIPPED VIA	Paid or Coll
1303	17108	2	NET 30	OT	
QUANTITY	DESCRIPTION	PRICE	AMOUNT		
	RENTAL EQUIPMENT PER ATTACHED		12.50		
		State	.38		
		RTD	.08		
			12.96		

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE.

**CCS SUPPLY CO.**  
 DISTRIBUTORS OF CONSTRUCTION MATERIALS  
 5130 FOX  
 DENVER, COLORADO 80216  
 TELEPHONE 393-429125

RENTAL INVOICE

*Job 3710-2510*

*R70*

SOLD TO: *Walters CM*  
*JOL # 3700*

JOB LOCATION

*9/91 Sheridan Blvd*

DATE SHIPPED	CUSTOMER ORDER NUMBER <i>17108</i>	TERMS 1% 10 DAYS-NET 30 DAYS	INVOICE DATE <i>8-26-84</i>	INVOICE NUMBER
QUANTITY <i>12 Pcs</i>	DESCRIPTION <i>Steel Wedges</i>			AMOUNT <i>.10 ea / mo</i>
<p>All Equipment shall be returned in same condition as received. Any Damage or Cleaning will be at lessee expense. Please check equipment before accepting.</p> <p>SIGNATURE _____</p>				

RENTAL PERIOD	DATE	TIME OUT	TO	DATE	TIME IN	TOTAL
RENTAL RATE - DAY	WEEK	MONTH				
PURCHASE OPTION	YES <input type="checkbox"/>	NO <input type="checkbox"/>	PRICE \$			
SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE HEREOF, WHICH ARE MADE A PART HEREOF AS IF FULLY SET FORTH HEREIN ABOVE.						
I HAVE READ THE TERMS AND CONDITIONS OF THIS LEASE AGREEMENT AND AGREE THERETO:						
<i>Kevin Calvert</i> NAME OF CORPORATION, PARTNERSHIP OR INDIVIDUAL LESSEE						
BY		TITLE		DATE		
						TOTAL

ALL INSURANCE TO BE PROVIDED AT LESSEE EXPENSE

FILE CODE - J FUTURE DATE

--- PROJECT INCOME / COST DISTRIBUTION ---

MP0010

WALTERS CONST. MANAGEMENT -09-

PAGE 1

10/31/84

PROJECT NO.	CODE NO.	PI NO.	TYPE NO.	VENDOR / CLIENT NAME	INV. NO. / C/L TRANS.	INCOME AMOUNT	COST AMOUNT	SUBIT NO.	GEN. /LENG ACCT. NO.
-------------	----------	--------	----------	----------------------	-----------------------	---------------	-------------	-----------	----------------------

3710 HYLAND OFFICE PARK

1130	01			*****	LAB.101004	0140.64		PR02-0103	500001P
1130	01			*****	CO.X101004	042.19		PR02-0106	501001P
1130	03			*****	JE 13	0201.00		GL01-0618	505001P
1130	00			COUNTY LINE LANDFILL	5005239	074.40		PJ03-0106	505001P

TOTAL FOR CODE - 1130 -

0438.23

1160	02			HYLACH SUPPLY CO	3220	070.74		PJ04-0043	502001P
------	----	--	--	------------------	------	--------	--	-----------	---------

TOTAL FOR CODE - 1160 -

070.74

1330	02			AIR PRODUCTS AND CHEMICAL	562 79051	017.82		PJ04-0034	502001P
------	----	--	--	---------------------------	-----------	--------	--	-----------	---------

TOTAL FOR CODE - 1330 -

017.82

1330	01			*****	LAB.100704	010.73		PR01-0177	500001P
1330	01			*****	CO.X100704	03.23		PR01-0178	501001P
1330	01			*****	LAB.101004	026.00		PR02-0107	500001P
1330	01			*****	CO.X101004	00.06		PR02-0108	501001P
1330	01			*****	LAB.102004	030.76		PR04-0101	500001P
1330	01			*****	CO.X102004	09.23		PR04-0102	501001P
1330	02			WESTERN FASTENERS	001277	003.76		PJ04-0046	502001P

TOTAL FOR CODE - 1330 -

0172.67

2205	03			SIMPPLY CONSTRUCTION CO.	3709	04346.00		PJ05-0270	503001P
------	----	--	--	--------------------------	------	----------	--	-----------	---------

TOTAL FOR CODE - 2205 -

04346.00

2215	03			NORTHWESTERN CONST	2002	01045.00		PJ05-0000	503001P
------	----	--	--	--------------------	------	----------	--	-----------	---------

TOTAL FOR CODE - 2215 -

01045.00

2220	01			*****	LAB.100704	0107.00		PR01-0179	500001P
2220	01			*****	CO.X100704	032.10		PR01-0100	501001P
2220	02			WEST LUMBER CO	47637	0306.00		PJ04-0042	502001P

TOTAL FOR CODE - 2220 -

0525.90

2310	02			WEST LUMBER CO	47053	014.79		PJ04-0020	502001P
2310	04			CCS SUPPLY	31160	010.36		PJ04-0020	504001P
2310	04			GARDY MORG	3321	037.12		PJ04-0022	504001P
2310	04			POWER SERIAL EQUIPMENT IN	27403.01	0176.27		PJ05-0003	504001P

TOTAL FOR CODE - 2310 -

0238.54

QUALITY FAST SERVICE  
LUMBER

TELEPHONE 288-1318  
4801 EAST 60TH AVENUE  
P.O. BOX 100

COMMERCE CITY, COLORADO 80037

47853

"Hast has it"

DATE	Aug 27 1984		
Cash	C O D	Chq	Your Order No
		X	1888

WALTERS CONST. MGR. C.M.  
7951 EAST MAPLEWOOD  
SUITE 200  
ENGLEWOOD, CO. 80111

**ADD**

[illegible]

NOTICE: ALL MATERIALS RETURNED SUBJECT TO 20% HANDLING CHARGE

**MATERIALS AND/OR LABOR  
RECEIVED PER INVOICE TERMS**

DELIVERY REQUESTED ON

CCT 2/22/24

**MONET. TOTAL**

STATE &amp; MTD TAX

96

COMM-FICE	COMM-FICE
-----------	-----------

FRT	LABOR
-----	-------

**GRAND TOTAL**

205  
OLD 67

**WILL CALL**

BY X Asst 20 Nov  
Thank You RECEIVED BY

RECEIVED BY

D-27



**SUPPLY, INC.**  
5150 FOX STREET  
DENVER, COLORADO 80216  
(303) 295-0168

RECEIVED

OCT 11 1984

INVOICE

R 31168

DATE 9/30/84

BILL L. WALTERS  
CONSTRUCTION MANAGEMENT, INC.

TO  
FROM

Walters CM  
7951 E Maplewood ave  
Suite 200  
Englewood, CO 80111

SHIP  
TO

9191 N Sheridan

OUR ORDER NO.	CUSTOMER ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Paid or Coll
1306	PO #17112	2	NET 30	OT	
QUANTITY	DESCRIPTION			PRICE	AMOUNT
	RENTAL EQUIPMENT PER ATTACHED				10.00
				State	.30
				RTD	.06
					10.36

NO MERCHANDISE RETURNED WITHOUT OUR WRITTEN PERMISSION - MAKE NO DEDUCTIONS FROM THIS INVOICE - IF INCORRECT RETURN AT ONCE



[illegible]

Shatters CM

DD-2





# Power RENTAL

RENTAL INVOICE

NUMBER 027483-01

PAGE 1

LESSEE: WALTERS CONSTRUCTION MGMT  
7951 EAST MAPLEWOOD AVENUE  
SUITE 200  
ENGLEWOOD CO 80111

FOR USE AT SITE  
92ND & SHERIDAN BLVD.

RECEIVED  
SEP 9 1984

ORIGIN DATE 8/24/84 TERMS NET EDM CUSTOMER REFERENCE P.O.# 18892 INVOICE DATE 9/25/84 MONTHLY BILLING

ITEM NUMBER CATALOG DESCRIPTION U/M USAGE UNIT PRICE RENT FROM & TO SOLD TO RENT TO

1700	POWER DRIVE 1/2 HP E	1.0	8/24 15	8/24 15	108.00
1701	RAM TAMPER 1000B	1.0	8/27 07	8/24 14	370.00 F
1702	PICKUP/DEL. ZONE B EA	1.0	7.29	8/24 15	7.29
1703	BUMPER PINTLE ADAPTE EA	1.0	15.00	8/24 15	15.00

ADDITIONAL COST  
CHECK MEMO TO #  
ISSUED 8/25/84 PER  
KAL @ POWER RENTAL

USE / DELIVERY OUT OF TAX AREA NUMBER  
DAMAGE WAIVER 8.40 TAXABLE  
PER MONTH OR 18.0 % NON-TAX  
IS ASSESSED ON  
OVER 30 DAYS

5.58 TOTAL

176.27

CHARGES OVER 30 DAYS

**APPENDIX E**  
**PROBLEMS AND SOLUTIONS**

## ASSIGNMENT 1

Analyze and suggest ways to improve the erection process of the precast structure of the Bank of Westminster from the given timelapse film. Set up a crew balance chart for analysis and comparison as shown in Methods Improvement for Construction Managers by Henry W. Parker and Clarkson H. Ogelsby, McGraw Hill Book Co., 1972.

- Given:
- 1) Welder 1 is dressed in dark pants and dark shirt.
  - 2) Welder 2 is dressed in dark pants and white shirt.
  - 3) Foreman is dressed in dark pants, white shirt, and red hard hat.
  - 4) Equipment Operator is dressed in dark pants, dark shirt, and dark ball cap.  
(NOTE: Operator does not leave cab of crane.)
  - 5) Each frame was taken every 60 seconds, therefore 1 frame is equal to 1 minute.
  - 6) The 60 second interval starts at the start of film.
  - 7) The second half of the film was taken at 15 second intervals, therefore 4 frames equals 1 minute.

FRAMES	HRS.				
560	2.2	IDLE			IDLE
525		PLACE & WELD "Y"			HOLD "Y"
480		IDLE			PICK UP "Y"
455		PLACE & WELD "Y"		SUPERVISION	MOVE "Y"
420		IDLE		HOOK UP "Y"	HOLD "Y"
385		WELD "Y"			PICK UP "Y"
350		PLACE "Y"		SUPERVISION	HOLD "Y"
315		POSITION "Y"		POSITION "Y"	PLACE "Y"
280		IDLE		HOOK UP "Y"	PICK UP "Y"
245		WELD "Y"		IDLE	HOLD "Y"
210		IDLE		HOOK UP "Y"	PLACE "Y"
175				SUPERVISION	
140					
105		WELD		SET TRANSIT	HOLD
70					
35		PLACE WEST CURTAIN WALL		LEVEL WEST WALL	POSITION WEST WALL
0					
		WELDER 1	WELDER 2 (SEE WELDER 1)	FOREMAN	EQUIP. OPER.

E-3

## ASSIGNMENT 2

Analyze and suggest ways to improve the erection process of the brick veneer of the Bank of Westminster from the given timelapse as shown in Methods Improvement for Construction Managers by Henry W. Parker and Clarkson H. Ogelsby, McGraw Hill Book Co., 1972.

- Given:
- 1) Foreman is heavy set with white hard hat dressed in tank jacket and dark pants.
  - 2) Two bricklayers both dressed in maroon shirts and dark pants with white hard hats.
  - 3) Laborer dressed in gray jacket, dark pants, and red hard hat.
  - 4) Laborer dressed in gray jacket with blue shoulders, dark pants, and white hard hat.
  - 5) Film was at 1 second intervals, therefore 60 frames equals 1 minute.

Frames | Minutes

1660+

1565 | 26

1540+

1420+

1300+

1080+

960+

840+

720+

600+

480+

360+

240+

120+

0

Placing  
Brick

Placing Brick

Positioning  
Bricks for  
Masons

Getting  
Bricks

Positioning  
Cement for  
Masons

Getting Cement  
For Masons

Working on  
Scaffold

Helping Masons

Setting Up  
Scaffold

Mason 1

Mason 2

Laborer



**APPENDIX F**  
**BIBLIOGRAPHY**

### BIBLIOGRAPHY

- Barrie, Donald S. Directions in Managing Construction. New York, N.Y.: John Wiley and Sons, 1981.
- Culbertson, Alan N. and Kenney, Donald E. Contract Administration Manual for the Design Professional. New York, N.Y.: McGraw Hill Book Company, 1983.
- Douglas, Clarence J. and Munger, Elmer L. Construction Management Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969.
- Oppenheimer, Samuel P. Directing Construction for a Profit. New York, N.Y.: McGraw Hill Book Co., 1971.
- Parker, Henry W. and Oglesby, Clarkson H. Methods Improvement for Construction Managers. New York, N.Y.: McGraw Hill Book Company, 1972.
- Reiner, Laurence E. Handbook of Construction Management. Englewood Cliffs, N.J.: Prentice-Hall Inc., 1972.
- Rubey, Henry and Milner, Walker W. Construction and Professional Management. Oklahoma: The Macmillan Company, 1966.

**END**

**FILMED**

4-86

**DTIC**